

CONTRIBUTIONS TO THE STUDY OF CALLUNA VULGARIS THICKET FROM THE TROTUS RIVER HYDROGRAPHIC BASIN

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INTRODUCTION

In Moldavia, the *Calluna vulgaris* thickets from Vrancea mountains and hydrographical basin Moldavita have been described before (Chifu et al., 2014), they are known for frequently spreading in the meadows from Apuseni Mountains. As part of monitoring the vegetation, we signal the presence of representative, typical phytocenosis in the southern part of the Nature 2000 Nemira Ridges site and in the surrounding of the Moinesti city.

MATERIAL AND METHOD

The investigations were made after the phytosociological method, completed by some aspects of the monitoring model of habitats.

RESULTS AND DISCUSSIONS

Spreading: Nemira Mountains on the Hungarian Ridge, the Ghepar Peak (Islaz Mereni) and the Cengu Peak, Oituz (Bacau county), Moinesti.

The thickets vegetation of *Calluna vulgaris* with *Vaccinium sp.* is part of the Nardo-Callunetum Preissing 1949 (synonymous with *Calluno-Ulicetea* Br.-Bl et R.Tx 1943). On the edge of the thickets, there is an interference with the surrounding *Nardus stricta*, extended because of the overgrazing, that cannot be part of *nardetosum strictae* (Csürös 1964) Chifu et al 2014. From the other classes of vegetation, the species of *Molinio-Arrhenatheretea* (Tab.1) are frequent.

Bioforms spectrum: phanerophytes 12,2 %, chamaephyte 9 %, hemicyptophytes 58, 5 %, therophytes 7,3 %, geophytes 4,9 % (Fig. 1).

The spectrum of the geographical elements: circumpolar 17%, Eurasian 36.6%, European 17%, 2.4% Carpathian Alps, the Carpathians 2.4%, 7.3% central-European, Balkans 2.4%, Submediterranean 2,4%, Ponto Mediterranean 2,4%, cosmopolites 9,8% (Fig. 2.)

The spectrum of ecological indices: Ligh: L4=2,38%, L5=9,52%, L6=11,9%, L7=33,3%, 8=42,8%, L9=2,38% In the category L8 there are plants that support in an exceptional way, the shading (*Calluna vulgaris*).

Temperature: T2=2,38%, 3=9,52%, 4=19%, T5=19%, 6=14,28%, =35,7%; In the category T3 there are plants adapted to the subalpine zone, in T4, plants adapted to the mountain levels, in T5 plants adapted to the submontane and hilly zones and in Tx the plants withstand temperature variations.

Humidity: U2=4,76%, U3=7,14%, U4=33,3%, U5=26%, U6=U7=4,76%, U8=4,76%, Ux=16,6%. In the category U4 there are plants of dry, wet, soil, U5 plants of wet soil.

The soil reaction: R1=4,76%, R2=9,52%, R3=7,14%, R4=4,76%, R5=26%, R6=4,76%, 7=11,9%, R8=2,38%, R9=2,38%, Rx=28,57%; In the category R5 there are plants of moderate, slightly acid soil.

Soil mineral nitrogen: N1=11,9%, N2=33,3%, N3=9,52%, N4=9,52%, N5=11,9%, N6=2,38%, N7=2,38%, Nx=19% . In the category N2 there are plants of soil with low and very low nitrogen (Fig. 3).

The soils are dry and they contain a lot of minerals.

The identified areas are extended on Namira Ridge. Around the Peak Ghepar, there is an intense gazing. On the Cengu Peak, there is no gazing, the species richness is higher; initially, there was a mixture of *Calluna vulgaris* with *Juniperus nana* and herbaceous species; on the date of the investigations the meadows contour was maintained by clearing young spruces and junipers.

After the classification of the habitats, Nature 2000, the association *Vaccino-Callunetum vulgaris* is part of the 4030 habitat- European dry heaths are protected. The phytocenosis identified by us, supports gazing sheep at different intensities, they reduce the diversity of the herbaceous species. On the Nemira Ridge sporadically occur species of *Campanula serata*.

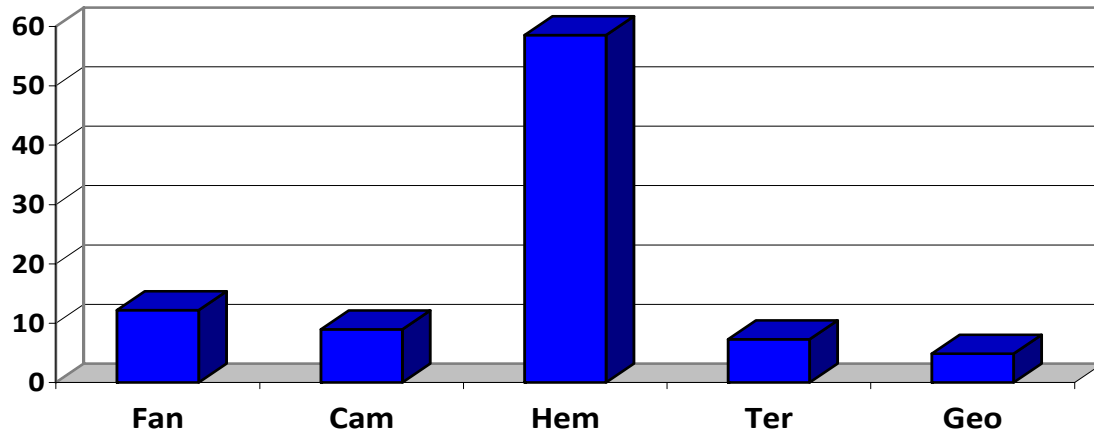


Fig. 1. Bioforms spectrum for Ass *Vaccino-Callunetum vulgaris* Bükér 1942

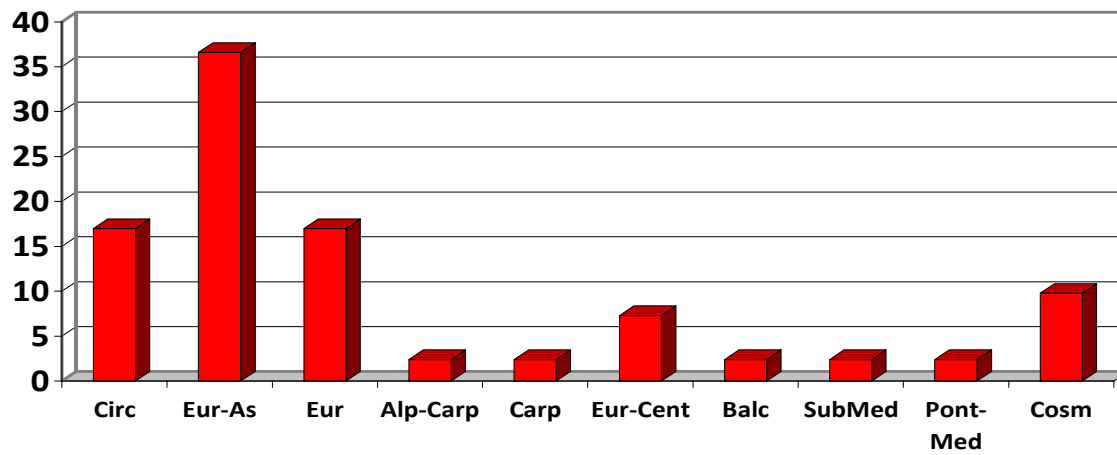


Fig. 2. The spectrum of the geographical elements for Ass *Vaccino-Callunetum vulgaris* Bükér 1942

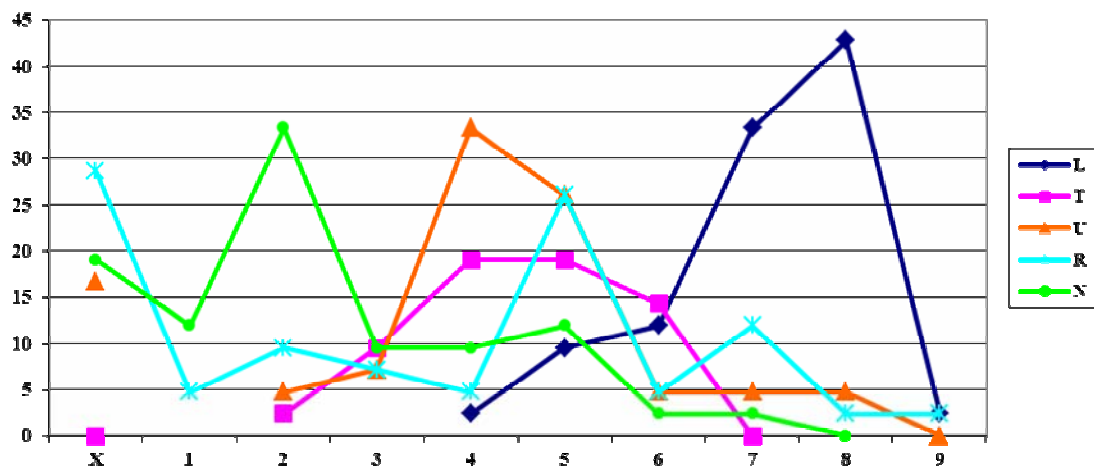


Fig. 3. The spectrum of ecological indices for Ass *Vaccino-Callunetum vulgaris* Bükér 1942

Table 1. Ass. *Vaccino-Callunetum vulgaris* Bükér 1942

Reports number	1	2	3	4	5	6
Inclination (°)	16-30	16-30	16-30	15	15	5
Surface (m ²)	100	100	100	100	100	100
Exhibition	SE	SE	SV	S	E	E
Vegetation cover (%)	100	70	100	90	75	100
Carr. Ass.						
<i>Calluna vulgaris</i>	5	3	3	2	4	4
<i>Vaccinium myrtillus</i>	+	+	+	+	.	1
<i>Nardus stricta</i>	+	2	2	+	1	.
Genisto- Quercion						
<i>Genista tinctoria</i>	+	+	.	+	.	.
Potentillo ternatae-Nardion						
<i>Hieracium pilosella</i>	+	+	+	+	+	.
<i>Campanula serrata</i>	+	+	+	+	.	.
<i>Potentilla ternata</i>	.	.	.	.	.	.
Nardetalia						
<i>Festuca rubra</i>	+	1	3	4	.	.
<i>Festuca nigrescens</i>	.	.	.	.	.	.
Callunetea-Ulicetia						
<i>Potentilla erecta</i>	+	+	.	.	+	.
<i>Anthoxanth. odoratum</i>	.	.	.	.	+	+
<i>Lycopodium clavatum</i>	.	.	.	.	.	+
Oxycocco- Sphagnetia						
<i>Vaccinium uliginosum</i>	.	.	+	.	.	.
Arrhenatherion						
<i>Picris hieracioides</i>	+	.	.	.	.	.
Arrhenatheretalia						
<i>Thymus pulegioides</i>	+	.	.	.	.	.
<i>Thymus montanus</i>	+	+	+	+	.	.
<i>Briza media</i>	+	.	.	.	.	.
<i>Campanula patula</i>	+	.	.	.	.	.
Molinio-Arrhenatheretia						
<i>Agrostis capillaris</i>	+	.	.	1	+	.
<i>Lathyrus pratensis</i>	+	.	.	.	.	.
<i>Avenula praeusta</i>	+	.	.	.	.	.
<i>Stellaria graminea</i>	.	+	.	+	.	.
<i>Leontodon autumnalis</i>	.	.	.	.	+	.
Cynosurion						
<i>Polygala amara</i>	+	.	.	.	.	.
Deschampsion						
<i>Deschampsia caespitosa</i>	+	.	.	+	.	+
Molinion						
<i>Dianthus superbus</i>	+	.	.	.	.	.
Cirsio-Branchypodion						
<i>Helianthemum nummularium</i>	+	.	.	.	.	.
Sedo-Scleranthion						
<i>Dianthus armeria</i>	+	.	.	.	.	.
Festucion pseudoninae						
<i>Achillea setacea</i>	.	.	.	.	+	.
Epilobion-angustifolii						
<i>Calamagrostis epigeios</i>	.	.	.	.	.	+
<i>Calamagrostis arundinacea</i>	+	.	.	.	.	.
Dicrano- Pinian						
<i>Pinus sylvestris</i>	.	.	.	+	.	+
Piceetalia						
<i>Juniperus communis</i>	.	+	1	+	.	.
<i>Luzula luzuloides</i>	+	+	.	.	.	.
Vaccinio-Piceetia						
<i>Vaccinium vitis-idaea</i>	+	+	.	+	.	.
Quercio-Fagetia						
<i>Betula pendula</i>	.	.	.	.	+	1
<i>Poa nemoralis</i>	.	.	.	.	.	+
Koelerio-Corynephoritia						
<i>Rumex acetosella</i>	+	.	.	.	.	.
Variae syntaxa						
<i>Cruciata pedemontana</i>	+	.	.	.	.	.
<i>Hypericum acutum</i>	.	+	.	.	.	.
<i>Carthamus lanatus</i>	.	.	.	.	+	.
<i>Pteridium aquilinum</i>	.	.	.	.	+	+
<i>Rosa canina</i>	.	.	.	.	.	+

Place and date of reports:

1. Hungarian Ridge, close to Cengu Mountain (02.08.2014);
2. Cengu Mountain (02.08.2014);
3. Cengu Mountain (02.08.2014);
4. Between Ghepar Peak and Islaz Mereni (02.08.2014);
5. Moinesti, next to Magistrala (July 2006); Runcului Hill, Oituz (29.06.2000)

CONCLUSIONS

These thickets protect the plants against erosion, most areas were always grazed, the floristic diversity was lost, valuable floristic elements disappeared. It's more difficult, but not impossible, that these lands to be protected, because they are placed close to the forests.

ABSTRACT

The meadows covered on certain portions with undergrowth vegetation of *Vaccinium* and *Calluna vulgaris* are not affected by erosion processes, they sporadically contain herbaceous species that are specific to the biogeographical region and to the vegetation level, some of them with a protective importance. After grazing or formation of passages for animals, these grass species are diminished and sometimes massively destroyed. In the terrestrial survey, we have identified a small number of species, the layer of woody plants remains unmodified regarding the covering, the layer of the plants, when it exists, it modifies its quantitative structure and it will sometimes be dominated by *Nardus stricta* that is qualitatively poor in species. The described calumets occupy small areas in comparison with the surrounding herbaceous vegetation, are moderately or heavily exposed to the zoogene pressure, they need a complete protection regime.

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