VEGETATION IN THE JIULUI'S VALLEY BETWEEN BUMBEŞTI JIU AND LIVEZENI

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Abstract

The study of flora and vegetation constitutes an actual problem for the conservation and rational management of biodiversity.

To compose this work, the study was started in 2008 and continued to the present, by doing numerous outputs in the land, in all periods of vegetation.

The purpose of the investigation was to evaluate the diversity of the Phytocoenosisin the Jiu Valley between BumbestiJiu and Livezeni for the conservation and rational use of flora and vegetation. For the study of vegetation I ran about 178 topographic map on which were outlined the 14 vegetable associations, grouped into 13 alliances, 11 orders and 8 classes.

The material collected, determined and processed as well as observations collected on the spot, are the subject of this paper.

Key words: vegetation, association, plant floor, nemoral, boreal, subalpine

INTRODUCTION

Research on vegetation floristics is done through observations, descriptions, detailed or general measurements and experiments, depending on the purpose.

The research on the vegetation of the researched territory refers in particular to the most representative and more widespread Phytocoenosis which I have framed in 14 associations, well outlined, on the basis of reports made.

The size of the sample areas for the study of grasslands has been, generally, of 100 m2 and had the shape of a square.

Otherwise, it was valid according to the type of vegetation: forests for 400-1000 m2, for infertile 4 – 25 m2 and for wetland vegetation and weeds 25-100 m2.

The reports were chosen in the characteristic associations, taking into account the appropriate areas for each type of phytocoenosis.

In the undertaken research, I considered the current state of grasslands and forests in the territory studied as a result of the long influence of environmental conditions, to which has been added the action of man and animals.

One could observepiles of associations that affect each other,influence reflected in the floristic composition.

MATERIAL AND METHOD

In the study of vegetation in the researched territoryI have used the methods of investigation of the central European school developed by Braun-Blanquet. As a syntaxonomic base unit,I have adopted the plant association, later defined as "the basic unit in phytosociology, abstract concept that evolves from an ensemble of association individuals sharing almost the same floristic, statistical, ecological, dynamic, corologic and historical particularities " (the Géhu J.M. et s. Rivas-Martinez, 1981).

The associations name was made after the provisions laid down in the phytosociology nomenclature code (J.J. Barkman, j. Moraveç et s. Rauschert 1986).

The description of the associations was made with the help of edifying, differential and characteristic species. For the classification of the associations I have used work summary on the vegetation of Romania elaborated by various authors or collectives in the country and abroad. (1980, g. Sachdeva Brian et al. 1997, v. S et al. 2001, v. S 2002 Mucina, l. 1997, a. Baheti 1996, w. Rothmaler, 1994, 2000), etc.

The notes in the booklet also contained information on the environmental conditions on the floristic and cenotic composition of the plant populations that make up the association individual, the date of the picking, location, altitude, exposition, inclination, vegetation cover, the economic importance of the phytocoenosis and the list of species recorded, together with their structural characteristics.

With the notation of the taxa contained in making reports, the appreciation of the participation of each species has also been made using Braun-Blanquet scale for abundance-dominance. Constancy of species was accomplished after Bahl's procedure (1934).

The phytocoenosis tables were made only for s well-contoured association, and detailed description only for the rare ones.

The fytocenological units, ordonated to theassociation,are often insufficient and differently interpreted infloristical and ecologicalterms which createsdificulties to the classification of some associations. However, attempts have been made to indicate these units delineated on the basis of recognition of the researched territory and to fit them in a summary system corresponding to each association.

For the classification of the associations in upper units (alliances, orders, classes) and their nomenclature, was based on the principles of the central

European fytocenologicalschool, adopted in the majority of phytocoenology methods declared in the country.

RESULTS AND DISSCUSIONS

Of all types of natural vegetation, the forests and meadows have the utmost importance in the economy and landscape of the region.

In the researched territory, there is a differentiation of plant cover on latitude and altitude, closely linked to climatic and edaphic factors (Daniel Ivan, 1979). These plant formations (some of them well- individualized regarding their aspect) characterizes a specific area or floor vegetation. The current boundaries of these areas or floors are not too often the natural ones, because the human factor has changed the surfaces with some vegetal formations depending on its economic needs. This aspect is pregnant in the area of forest, which hampers the establishment of authentic floors of vegetation.

Within the area of study covered by fractions of land and aquatic ecosystems, as little influenced by human activities, where they are admitted only traditional activities practiced only in the area of the National Park communities, traditional activities regulated by the management plan.

The territory covers an average altitude of 1.326 m respectively between 295 m and 1.621 m. Altitudinal field of 1,055-1.155 m, between 295 and 1 350 m-1450 m (maximum 1.520 m touched UP III, Bratcuua 117 d), is covered with forests. Above, and developed on their behalf, through deforestation, hypsometric difference of 171-271 m, expand mountain meadows, in the area CheniaDumitrei (1.520 m). In the deep and meandered valley of the river Jiu, there are steep wooded mountains with hillsides covered with natural compact forest, mostly Virgin and cvasivirgin, consisting of pure and mixed stands of beech (Fagussylvatica) and sessile oak (Quercuspetraea, q., q. dalechampiipolycarpa) conferring the spectacular aspect of the Canyon.

On the rocky areas appears the Sylvester pine (Pinussylvestris). In the rest of the forest stands, numerous other species of woody trees also grow, such as firs (Abies alba), Norway spruce (Piceaexcelsa), mountain Elm (Ulmusmontana), the small leaf tree (Tiliacordata), silver Linden Tree (Tiliatomentosa), hornbeam (Carpinusbetulus), rarely mountain (Acer pseudoplatanus), Birch (Betulaverrucosa), the willow (Salix caprea), ash (Fraxinus excelsior), Aspen poplar (Populustremula), black poplar (Populusnigra), wild blossoming sweet cherry tree (Cerasusavium), wild pear tree (Piruspyraster), Fraxinusornus, Sorbus aria, the Turkish cherry tree (Padusmahaleb) etc, shrub, such as: Cornussanguinea, black shock

(Sambucusnigra), red shock (Sambucusracemosa), chain slack (Euonimuseuropaea) and chain km² (Euonymus verrucosa), LILACS (Syringa vulgaris), nuts (Corylusavellana), rosehip (Rosa SP.), Hawthorn (Crataegus spp.). The mountain gap is covered with meadow vegetation.

The common-oak floor (inferior nemoral) is located in continuation of the area and occupies the upper side of the Getic Piedmont plateau, the hills and sub-Carpathian depressions, and numerous forms of secondary relief: terraces, valleys, etc. Although their aspect seem to be unitary, sessile forests of this floor presents a structural diversity largely dependent on the petrographic and edaphic substrate that modifies the composition of the herby and shrub layer.

A feature of this part is the advancement of the cerris and of the Hungarian oak, present in the upper zone, on the sunny and warm slopes of the Getic Piedmont Hills. In the middle and upper side, conditions for the alternation of the formations of Quércusdalechampii, alone or in combination with various species, are created. At the level of the track grooves, it settles in the southern areas,wereas in the northern areas there are the hornbeam and beech forests. This alternation of beech with hornbeam and common oak forests is possible due to the strongly fragmented relief and to the microclimate favourable to the beech forests, more sensitive with the moisture from the soil and the atmosphere.

From the cenotaxonomic point of view, the present woody vegetale formations can be assigned as the pubescent Quercetea-petraeae (the bottom) or Querco-Fagetea (those at the top, or on the hillsides with Northern exposure).

The specific meadow areas of this floor are attributed to Molinio-Arrhenatheretea. They have numerous species of mesophylls or mesohydrophyles in their floriculture.

The Beech Floor (superior nemoral)

In the lower, the beech appears in the form of sparse individuals in the forests of sessile oak or hornbeam, then it climbs on the course streams, rocky areas and, finally, as the altitude increases, it becomes more and more frequent, forming compact forests.

Where the soil allows the development of grassy vegetation, plants of this kind are distributed depending on the amount of humus, moisture and light, giving it different aspects.

The beech forests in the mountain areas become individualized as well-contoured cenotic units, compared with those of the sub-Carpathian depression and even over the track grooves belonging to GeticPiemont, actually found on the occasion of numerous trips made in the various mountain peaks in the studied territory. In addition, they impresse with the floristic richness and through their protective role over the slopes they grow.

In the researched territory, they are installed on all facets, from the Carpathian basin, and up to the peacks. At the lower level, there are pure beech forests of Luzulo – Fagetumsylvaticaealbidae and FagetumsylvaticaecordatiSymphyto-Querco-Fagetea assigned as Fagetaliasylvaticae; at the upper limit, they mix with the fir and Norway spruce. The altitudinal position of the beech forests in the sub-Carpathian region justifies the lack of many items of authentic mountain grass flora, which are replaced by another feature of the lower regions, in particular the Carpinionbetuli alliance.

At the entrance to the mountain region there is an area more or less wrecked, with rocks, small steep areas, cobbles and sliding lands. In these poor places, woody vegetation presents a special composition, being represented by large forests of Bétulapéndula. Due to the ease in the releasing and germination of birch seed, they invaded the rocky coasts avoided by other species of forests on the valleys.

On the deforested mountainsides of this floor, the mesofyllphytocoenosis of the Association of Festuco-Agrostietumrubraecapillaris from Molinio-Arrhenatheretea have been installed. Due to intensive grazing in portions, this association is replaced by the mountain Nardusstricta, worthless regarding its feed value, which, with its bushes, inhibits the growth of other good fodder species. Also, there appear islands of intrazonal and azonal vegetation caused by local environmental factors.

The Spruce Floor (boreal)

To the North of beech floor (nemoral), the spruce or boreal floor begins, stretching on some mountain peaks in the territory looked up in the subalpine meadows. The dominant species is Píceaábies; beside this you may find isolated specimens of Ábiesálba or Lárixdecídua.

In the woodlands of spruce ranges there is also met a small number of woody species. Of these, the most common is the fir, which appears more often on low-lying and moist valleys, Ácerpseudoplátanus, Úlmusglábra, FráxinusFágussylvática and excélsior.

The arboreal pollens is also poor. In addition, one may also find the Sórbusaucupária,Sambúcusracemósa, Rúbusidaéus, Dáphnemezeréum, etc.

Unlike the characteristic species of spruce, in these forests may also penetrate other plants that, by their great number, change the physiognomy of this layer.

Example: Calamagróstisarundinácea form, in the full sun, cespitose bushes in the forest changes its appearance, individuals no longer have bushy leaves at the base, they have a very poor degree of fruition, and the sociability is almost null.

Senécioovátus that usually grows in wet, brighter sights also grows very well in the shade of the forest, where it flourishes and leverages. The same thing happens with Rúbus and idaéus.

In deforested areas mountain weeds may be found, belonging to Epilobieteaangustifolii class.

Forest vegetation in this part of the studied territory fit to the Vaccinio-Piceetea class, and the meadows to Molinio-Arrhenatheretea.

This floor is starting to shape up with the appearance of the spruce forests limit (≈ 1650 m) and continues with the one of the junipers and the undergrowth dwarfs of Vaccíniummyrtíllus, v. vítis-idæa, Rhododéndronmyrtifólium or Loiseléuriaprocúmbens at the top (at altitudes of approximately 2000 m).

The monotony of the slightly-waved relief, which is characteristic to this floor, and also the poor lithological differentiation (crystalineschists of the Getic layer) and pedological differentiation (podzol brown soils, podzolhumic-feriiluvial,skeletalpodzol ,latosoils) associated with the climate variations hardly felt as far as altitude is concerned, suggests, at first glance, a weak fitosociological differentiation.However, each item of relief, along with other local environmental factors, contributes to the emergence of noticeably different massifs of the floristic point of view.Regional specific meadows are spread on the gentle slopes and the ridges extend. They are dominated by poaceae and dwarf cyperaceae. The ones at the bottom fit to Potentillo-Nardion, and those in the upper part, to Vaccinio-Piceetea or Caricioncurvulae and Cetrario-Loiseleurion.

Only on the steeper slopes, bushes of mountain pine and rose bay, with different species of Vaccínium, can still be found.

CONCLUSIONS

On my traveling to the researched area,I observed, as far as possible,the current state of vegetation, the dynamics in time and space, successional directions of the most important phytocoenosis of the lands where human influence is more strongly felt.

The main feature of the vegetation of the survey area is its position/location according to relief and climate. Also, in addition to altitude, the vegetation floors delineation should take into account the comparing effect of the exposure and the inclination.

In the researched areal, there are two stages of vegetation: the first stage - mountain vegetation, that includes: mixed forests of beech, spruce, fir, sometimes pure small surfaces of young fir and beech trees; mountain meadows, mixed forests of beech, spruce and fir; mountain beech forests. The second stage- vegetation of plains,plateau and hills, which has: hills and

plateau beech forests; alternation of beech forests with sessile oak forests and mixed forests of beech and sessile oak, sometimes mixed with other species of deciduous trees on the hills and plateau; sessile oak forests on the hills and plateau.

The common oak floor comes because of relatively small areas have a mosaic of phytocoenosis, both Woody and grassy, different in terms of floristic and ecological aspects.Beech is one of the most common woody species in the territory, constituting, alone or together with Norway spruce, the largest part of the Carpathian basin and mountain forests.

Boreal floor is the top floor with complete woody vegetation. Towards the upper limit is the spruce limit, consisting of small and rare trees.

Spruce and junipers natural boundaries limit are hard to be specified due to the influence of the zoo-anthropogenic factor which was manifested most poignantly on these plant formations.

The material collected, determined and processed, as well as observations collected on the ground, outline the 14 vegetal association, grouped into 13 alliance, 11 orders and 8 classes.

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