ANALYSIS OF VASCULAR FLORA IN THE JIULUI'S VALLEY BETWEEN BUMBEŞTI JIU AND LIVEZENI

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Abstract

The process of drafting several botanical works with monographic character, involving either more or less extensive areas of Oltenia, which however did not consist of the territory investigated, determined me to approach the study of flora and vegetation in the Jiului's Valley between Bumbesti and Livezeni.

The investigations carried out have allowed establishment of floristic composition and preparation of cenotaxonomic vascular flora, setting the composition of phytocaenosis, identification and description of the vegetal associations, cenotaxonomic summary of vegetation.

The present paper presents analysis of the vascular flora of the explored area, regarding taxonomic and bioform elements.

The taxa analyzed belong to all categories of geoelements established for the territory of our country, their number being relatively significant reported to Romanian flora.

In what the analysis of bioforms is concerned, hemicryptophytes are noted, followed by terophyites, geophytes and fanerophytes

Key words: flora, family, bioform, taxon, hemicryptophytes, Jiului's Valley

INTRODUCTION

On its way from the springs to the Danube, the River Jiu has wrought, on a length of 33 km between localities Bumbeşti and Livezeni, one of the most stately Carpathian transverse valleys from Romania: Jiu's Valley -a place of rare beauty.

The extraordinary biodiversity and unique landscape here have determined Romanian authorities to establish a comprehensive protected area called Jiu's Valley National Park with an area of 11,127 ha, being located in the West of Southern Carpathians, on the eastern slope of the Vâlcan mountains and on the western slope of Parang Mountains. (Fig.1). Administratively, it belongs to Gorj county with over 10 thousand hectares and the rest belongs to Hunedoara County.

For this study, research has been conducted on a distance of 33 km in between Bumbeşti Jiu and Livezeni, in the forest Bratcu from *UP III Bratcu*

and in the forest *Chitu from UP IV Chitu,from* Fold Forest Bumbeşti (1.108 ha in UP III Bratcu, ua: 44-73 and 310,4 ha in UP IV Chitu, ua: 3-5, 9-14).
Research activity took place during the vegetation season(the months VI-VIII) between 2009 -2012, itinerary method (method of route)-Boşcaiu,1965.

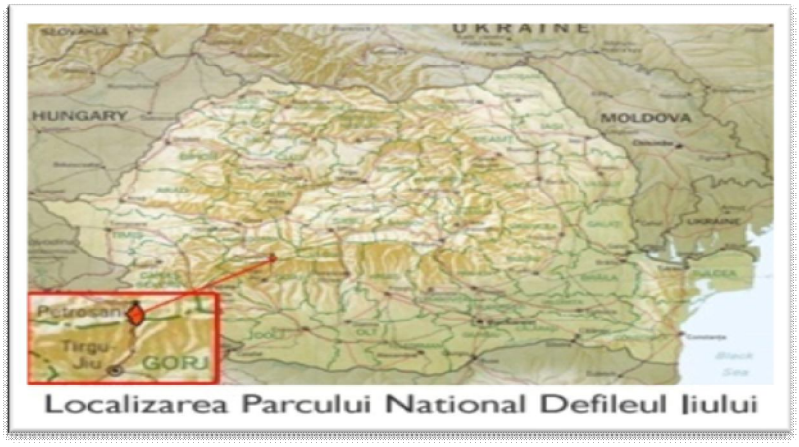

Figure 1 Location of the Jiu's Valley National Park

MATERIAL AND METHOD

The data obtained in the field, the botanical material collected, were processed, systematized and cathegorized according to the current system of life.

The first stage in research has been consulting library material.
In this sense some of the publications inserted in the bibliography represented a reference material due to the similarity of the geographical area to the one in which the territory is probed. Of these, we mention the publications that contained species quoted from the researched territory.

Starting from this bibliographical information, we conducted personal research on field on numerous occasions, because of the surface's area, but where it was necessary that we perform a much more detailed study, the method of hospitalization was used, collecting and preserving floristic material.

Collection of material was made almost periodically in numerous copies in various stages of vegetation. For the study of the floristic diversity, there have been performed about 200 topographic map phytocenology throughout the season of vegetation, according to methodological indications (Borza, Boşcaiu,

1965; Ivan, Doniţă, 1975; Ivan, 1979; Cristea, 1991; Drăgulescu,Sârbu, 2002; Cristea et al., 2004; Ştefan, 2005).

Identification of the taxa was made using recent sources of taxonomic information(Săvulescu T. , al. 1952 -1976; Tutin T. G., Heywood V. H., Burges N. A., Valentine D. H., Walters S. M., Webb D. A., et al. 1964 –1980; Beldie Al. 1977, 1979; Castroviejo S., Lainz M., López Gonzáles G., Monserrat P., Munoz Garmendia, Paiva J., Vielar L. et al. 1990; Rothmaler W. 1994, 2002; Gubanov I. A. et al. 1994; João Do Amaral, Franco e Maria Da Luz, Rocha Afonso 1995; Kojuharov S. J. , Kuzmanov B.A. 1995; Ciocârlan V. 2000 etc.).

For taxa whose objective determination was not possible on the field, fresh material has been collected and kept for subsequent verification, using specific determination keys for each group of organisms. Another part of the material has been kept and preserved by pressing it. Abbreviations of authors were made after Brummitt, Powell (1992).

Families were listed in systematic order given by Cronquis, A. Tahtadjean and W. Zimmermann (1966) and adapted by M. A. Fischer (1994). Within each family, the genera and species have been inserted in alphabetical order. Synonyms for each species were listed in parenthesis after the actual scientific name of each of them. Conservation- the material preserved by drying was pasted on A_3 sheets **,** each having attached on the right side the label in which they are written: scientific name, locality and the point where it was collected, date, people who collected them and identification.

RESULTS AND DISSCUSIONS

1 TAXONOMIC ANALYSIS

The floristic list includes 516 taxa assigned thus: Pteridóphýta-12, Spermatóphýta-503, with 4-Pinophýtina and 500 at Magnoliophýtina. If you relate the number of 516 taxa to the number of existing species in the Flora of R.P.R.-R.S.R. we can draw the conclusion that the researched territory has a fairly rich flora. This floristic diversity is due to the physical and geographical aspects, great altitudinale amplitudes (circa 1500-1700 m.s.m.), geological substrate diversity and, linked to this, various types of soils and of genetic and historic factors. In floristic regard, the taxa belong to 73 families (table 1), the largest percent being from the following families: Asteráceae, Poáceae, Rosáceae, Lamiáceae, Fabáceae, Caryophylláceae, Scrophulariáceae, Apiáceae,

Liguliflorae, Brassicáceae,. The rest of the families have less than 15 representatives.

Table 1

Taxonomic analys

No.	Family	No.of sp	No.	Family	No.of sp.
1.	**LYCOPODIÁCEAE**	1	46.	**GENTIANÁCEAE**	3
2	**ASPLENIÁCEAE**	5	47.	**ASCLEPIADÁCEAE**	1
3.	**POLYPODIÁCEAE**	1	48.	**OLEÁCEAE**	3
4.	**ATHYRIÁCEAE**	5	49.	**SOLANÁCEAE**	2
5.	**PINÁCEAE**	4	50.	**CONVOLVULÁCEAE**	2
6	**ARISTOLOCHIÁCEAE**	1	51.	**BORAGINÁCEAE**	10
7.	**RANUNCULÁCEAE**	9	52.	**VERBENÁCEAE**	1
8.	**PAPAVERÁCEAE**	2	53.	**LAMIÁCEAE**	**26**
9.	**ULMÁCEAE**	1		**(LABIATAE)**	
10.	**URTICÁCEAE**	2	54..	**PLANTAGINÁCEAE**	5
11.	**JUGLANDÁCEAE**	1	55.	**SCROPHULARIÁCEAE**	**20**
12.	**FAGÁCEAE**	3	56.	**OROBANCHÁCEAE**	3
13.	**BETULÁCEAE**	3	57.	**CAMPANULÁCEAE**	10
14.	**CORYLÁCEAE**	2	58.	**RUBIÁCEAE**	8
15.	**PHYTOLACCÁCEAE**	1	59.	**CAPRIFOLIÁCEAE**	4
16.	**CARYOPHYLLÁCEAE**	**2 3**	60.	**VALERIANÁCEAE**	2
17.	**AMARANTHÁCEAE**	2	61.	**DIPSACÁCEAE**	3
18.	**CHENOPODIÁCEAE**	2	62	**ASTERÁCEAE**	**56**
19.	**POLYGONÁCEAE**	1 2	63	**LIGULIFLÓRAE**	**22**
20.	**CRASSULÁCEAE**	5	64	**ALISMATÁCEAE**	1
21	**SAXIFRAGÁCEAE**	7	65	**DIOSCOREÁCEAE**	1
22.	**ROSÁCEAE**	**33**	66	**LILIÁCEAE**	5
23.	**FABÁCEAE**	**24**	67	**ALLIÁCEAE**	2
24.	**ONAGRÁCEAE**	11	68	**AMARYLLIDÁCEAE**	2
	(OENOTHERÁCEAE		69	**ORCHIDÁCEAE**	6
25.	**THYMELEÁCEAE**	2	70.	**JUNCÁCEAE**	9
26.	**CORNÁCEAE**	3	71	**CYPERÁCEAE**	11
27.	**SANTALÁCEAE**	1	72	**POÁCEAE**	
28.	**EUPHORBIÁCEAE**	5		**(GRAMINEAE)**	**45**
29.	**ACERÁCEAE**	5	73	**TYPHÁCEAE**	3
30.	**OXALIDÁCEAE**	2			
31.	**GERANIÁCEAE**	6			
32.	**BALSAMINÁCEAE**	1			
33.	**LINÁCEAE**	1			
34.	**POLYGALÁCEAE**	3			
35.	**ARALIÁCEAE**	1			
36.	**APIÁCEAE**	16			
37.	**HYPERICÁCEAE**	4			
38.	**TILIÁCEAE**	1			
39.	**MALVÁCEAE**	1			
40.	**VIOLÁCEAE**	4			
41.	**TAMARICÁCEAE**	1			
42.	**BRASSICÁCEAE**	15			
	(CRUCIFERAE)				
43.	**SALICÁCEAE**	7			

44. 45..	**ERICÁCEAE** **PRIMULÁCEAE**	4 5			

2.BIOFORM ANALYSIS

In terms of the analysis of bioforms, it can be noticed that the first place is occupied by the hemicryptophytae with 314 taxa (table and figure 2), belonging to the northern elements in particular and less to the southern elements. They represent the main components of the layer of forests, grassy meadows and vegetation of infertile field.

Table 2

Bioform analysis

No.	Biof.	No. of taxa	No.	Biof.	No. of taxa
	H.	277		**G. (H.)**	2
	H. (Ch.)	13		**Total G.**	**129**
	H. (HH.)	13		Ph.	127
1.	H. (G.)	9	**4.**	Ph. (Ch.)	1
	H.-G.	1		**Total Ph.**	**128**
	H. (HT.)	1	**5.**	HT.	50
	Total H.	**314**		HT.-H.	28
	T.	195		HT.-Ch.	1
	T.-HT.	25		**Total HT.**	**79**
	T.-H.	6		Ch.	40
	T., HT.	2		Ch. (Ph.)	2
	T., HT., H.	1	**6.**	Ch. (H.)	2
2.	T.-HT., H.	1		Ch.-H.	1
	T.,H.	1		**Total Ch.**	**45**
	T.-H.(HH.)	1	**7.**	HH.	19
	T. (HH.)	1		**Total HH.**	19
	T.-Ch.	1	**8.**	Ep.	1
	Total T.	**274**		**Total Ep.**	**1**
	G.	112			
3.	G. (HH.)	15			

Figure 2.Bioform spectrum

CONCLUSIONS

In floristic range, although Asteráceae family has the largest number of species, yet it is poorly represented in a phytocoenosis, because it has a very small share in the composition of the phytomass. In deciduous forests, the plants from the family of Fagáceae are overwhelming in number; in resinous

forests, the Pináceae are predominant, and the physiognomy of the meadows is given by representatives from Poáceae family. If you do an analysis in terms of the number of praticole and forestry species, we can say that the floristic diversity is much higher in open land than within the forests or bushes.

The forests consist of numerous vernal species, annual and geofit species. Their number is reduced significantly when tree leaves and shrubs occur.

The increased presence of hemicryptophytae indicates the belonging of the territory explored to temperate climate regions. The terophythes generally have a substantial participation, being spread out mainly on the former oak forests and infertile fields. Chamefits have a lower weight, and are located mostly at altitudes above 1500 m. Geophytes have a good presence in the flora, the majority of the taxa belonging to this biological forms being from the cathegory of the vernal flora from beech forests and mixed beech with resinous forests.

Phanerophyts, despite not having a good representation, give physiognomy to the woody vegetation of the studied territory, being very present and having great dominance. In the lower part of the territory studied, between the southern elements prevail phanerophyts (Quércus SP., órnus Fráxinus Córnus mas, etc.) and in the mountainous region, Central European elements (Fágus sylvática, Cárpinus bétulus, Ácer pseudoplátanus, Tília platyphýllos, etc.). Hidrohelophyts, through their participation, indicate a lack of aquatic plant formation stretched out in the region.

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