THE ANALYSIS OF THE FLORA FROM THE LOWER BASIN OF THE MOTRU RIVER

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Abstract. *The work presents the analysis of the flora from the Lower Basin of the Motru River, being emphasized the character and the particularities of the flora that cooperates at the phytogeographic framing of the studied zone and implicitly at the making of the vegetal groups specific to the zone.*

Keywords: *analysis, Basin, flora, the Motru, Romania.*

Rezumat. Analiza florei din Bazinul inferior al Motrului. *Lucrarea prezintă analiza florei din Bazinul Inferior al râului Motru, evidenţiindu-se caracterul şi particularităţile florei care concură la încadrarea fitogeografică a zonei studiate şi implicit la constituirea grupărilor vegetale specifice zonei.*

Cuvinte cheie: *analiză, Bazin, flora, Motru, România.*

INTRODUCTION

From the geographical point of view, the Lower Basin of the Motru River lies in the western part of the Getic Piedmont, with the coordinates: 44^0 55' North latitude and 23^0 45' East longitudes. The studied area is 691 Km^2. From the administrative-territorial point of view, the territory under research is located at the borderline between the counties of Gorj and Mehedinti-the borderline starts in the eastern part of the Negoiesti Hills (Comanesti-Mehedinti, altitude 388 m) and reaches the Jiu Valley near Gura Motrului (altitude 110 m). Being situated in the south-western part of the country and of the Getic Piedmont, the studied area has a Central-European climate with sub-Mediterranean influences. The valleys are not so deep, and the summits more matured; nevertheless, the slope processes are active, with a maximum intensity on deforested slopes. The slope processes developed due to the rock nature, favourable to denudation, quick withdrawal of the gradients to the axis of the interfluves. This fact contributed to wider valleys and extended river meadows. Between the eastern limit of the Mehedinti Plateau, the western passage of the Jiu River and especially to the long valley of the Husnita River (in South), stands out the Motru Piedmont (with a surface of about 1,837 km²), within its territory being separated, west of the Motru, the lower region of the Cosustei Hills (MIHAILESCU, 1966).

In the territory under research, there have been made floristic and phytosociological studies between 1997 and 2005, within the PhD. thesis (COSTACHE, 2005).

MATERIAL AND METHODS

The description of the taxa was performed by using specialty literature: The Illustrated Flora of Romania (BELDIE, 1977, 1979; CIOCÂRLAN, 2000; ROTHMALER, 2002 etc.) and others. The graphic representation of the specters has been made using Microsoft Office Excel 2003.

Abbreviations and conventional signs used in our paper:

Bioforms (biological forms, life forms): T.-terrophytes (annual plants which go over unfavourable conditions during winter or summer under the form of seeds); H.-hemicriptophytes (perennial plants whose regeneration organs are located at the soil level and are protected, during winter, by vegetal remains or snow).

Ecologic characterization: significance of the indexes U T R used in the paper in order to simplify the carrying out of the spectra when studying vegetation (according to POPESCU & SANDA, 1998, with some modifications COSTACHE, 2005)**.**

Soil humidity level (U_{1-6}): U_1-xerophyte (they grow in dry soils and they can stand the prolonged dryness of the soil); U_2-xeromesophyte; U_3-mesophytes (in soils with average humidity**,** they cannot stand prolonged dryness); U_4-mesohygrophyte; U_5-hygrophyte (they grow in wet soils, and their roots are under water or in swampy areas); U_6-hydrophyte (according to the author-ultrahydrophyte), (plants which grow in water, the regeneration organs are found under water); $U_{3(5)}$-alternately hygrophyte (with oscillations of the humidity level during the plants' vegetation period); U_{1-5}, (includes U_{1-3}, U_{2-5} etc.) - euri. = euriphyte (with large amplitude against the soil humidity).

Heat level (T): T_1-hechistothermic; T_2-microthermic; T_3-mesothermic; T_4-subthermophytes (moderately thermophytes); T_5-thermophytes; T_{1-5} (include $T_{1-4,}$ $T_{2-4,}$ $T_{2-5,}$ T_{3-5})-euriterm. = euriterms.

Acidity level (R): R_1-high acidophilus species; R_2-acidophilus; R_3-acido-neutrophile; R_4-low acid-neutrophile; R_5-neutral-basophile; R_{1-5}-(includes $R_{1-4,}$ $R_{1-3,}$ R_{2-5} etc.) - euriionic.

Geoelement (phytogeographical elements, origin of the species): Adv.-adventive (species which appeared because of man's inconstant activity); Am.-America; As.-Asia; Atl.-Atlantic; Balc.-Balkan; Circ.-Circumpolar (spread in the northern part of Eurasia and North America); Cosm.-Cosmopolite (large spreading all over the world); Euras.-Eurasian; Euras. cont.-Eurasian continental; Eur.-European; Eur. centr.-Central European; Eur. cont.-European

continental; Medit.-Mediterranean; Pont.-Pontic (North of the Black Sea); Pan.-Pannonic (In the Pannonic Plain); Submedit.-SubMediterranean; Subatl.-SubAtlantic. Others: No. crt.-Number characteristic.

RESULTS AND DISCUSSIONS

The conspectus of the flora in the Lower Basin of the Motru River includes about 1,231 taxa (COSTACHE, 2005). The presentation order of the analysis is the one followed in the characterization of the vegetal associations, like below.

The taxonomic analysis

The floristic list contains 1,231 taxa (1,018 species, 89 subspecies, 68 varieties, 21 forms, 11 hybrids and 24 cultivated species), distributed as it follows: Chlorophyta with 2 taxa-(1 species with 1 variety); Lichenophyta with 7 taxa (7 species) assigned at 3 families; Bryophyta with 65 taxa (60 species, 4 varieties and 1 form) assigned at 22 families; Pteridophyta with 22 taxa (20 species and 2 varieties) assigned at 9 families; Spermatophyta with 1,135 taxa, from which: Pinophytina with 4 taxa (3 species and 1 variety) assigned at 2 families; Magnoliophytina with 1,131 taxa (927 species, 89 subspecies, 60 varieties, 20 forms, 11 hybrids and 24 cultivated species-from which 16 have become sub-spontaneous), assigned at 93 families. From the Spermatophytes, the Asteraceae detain the biggest percent, followed by the Poaceae (Table 1).

Table 1. The families' balance sheet according to the number of the belonging taxa.
Tabel 1. Bilanțul familiilor în funcție de numărul de taxoni aparținenți.

No.	Family	No. taxa	No.	Family	No. taxa
1.	ASTERACEAE	126	49.	GENTIANACEAE	3
2.	POACEAE	105	50.	CONVOLVULACEAE	3
3.	FABACEAE	73	51.	ALISMATACEAE	3
4.	LAMIACEAE	54	52.	URTICACEAE	3
5.	ROSACEAE	51	53.	CORYLACEAE	3
6.	BRASSICACEAE	46	54.	IRIDACEAE	3
7.	SCROPHULARIACEAE	42	55.	ARACEAE	2
8.	CARYOPHYLLACEAE	39	56.	AMARYLLIDACEAE	2
9.	CYPERACEAE	39	57.	CORNACEAE	2
10.	APIACEAE	34	58.	VALERIANACEAE	2
11.	RANUNCULACEAE	27	59.	RHAMNACEAE	2
12.	LILIACEAE	22	60.	POLYGALACEAE	2
13.	POLYGONACEAE	22	61.	CUCURBITACEAE	2
14.	BORAGINACEAE	21	62.	ARISTOLOCHIACEAE	2
15.	ORCHIDACEAE	19	63.	CANNABACEAE	2
16.	CHENOPODIACEAE	18	64.	JUGLANDACEAE	1
17.	RUBIACEAE	17	65.	BETULACEAE	1
18.	EUPHORBIACEAE	15	66.	PHYTOLACCACEAE	1
19.	VIOLACEAE	15	67.	PORTULACACEAE	1
20.	SALICACEAE	11	68.	SAXIFRAGACEAE	1
21.	JUNCACEAE	10	69.	CAESALPINIACEAE	1
22.	FAGACEAE	10	70.	HALORAGACEAE	1
23.	MALVACEAE	9	71.	HIPPURIDACEAE	1
24.	CAMPANULACEAE	9	72.	LORANTHACEAE	1
25.	ONAGRACEAE	8	73.	CELASTRACEAE	1
26.	GERANIACEAE	7	74.	VERBENACEAE	1
27.	PLANTAGINACEAE	7	75.	CALLITRICHACEAE	1
28.	DIPSACACEAE	7	76.	ACANTHACEAE	1
29.	ALLIACEAE	6	77.	LENTIBULARIACEAE	1
30.	PRIMULACEAE	6	78.	OROBANCHACEAE	1
31.	OLEACEAE	6	79.	ADOXACEAE	1
32.	SOLANACEAE	6	80.	BUTOMACEAE	1
33.	POTAMOGETONACEAE	5	81.	DIOSCOREACEAE	1
34.	AMARANTHACEAE	5	82.	HYDROCHARITACEAE	1
35.	TYPHACEAE	4	83.	VITACEAE	1
36.	LEMNACEAE	4	84.	STAPHYLEACEAE	1
37.	CRASSULACEAE	4	85.	ZYGOPHYLLACEAE	1
38.	LYTHRACEAE	4	86.	BALSAMINACEAE	1
39.	CUSCUTACEAE	4	87.	LINACEAE	1
40.	CAPRIFOLIACEAE	4	88.	ARALIACEAE	1
41.	ACERACEAE	4	89.	CISTACEAE	1
42.	FUMARIACEAE	4	90.	RESEDACEAE	1
43.	ULMACEAE	3	91.	APOCYNACEAE	1
44.	PAPAVERACEAE	3	92.	ASCLEPIADACEAE	1
45.	PINACEAE	3	93.	MORACEAE	1
46.	OXALIDACEAE	3	94.	CERATOPHYLLACEAE	1
47.	HYPERICACEAE	3	95.	CUPRESSACEAE	1
48.	TILIACEAE	3			

Further, the analysis will be effectuated only on spontaneous and sub-spontaneous taxa from Phylum Spermatophyta.

The Life expectancy analysis

Just like it was expected, from the graphic shown below it results the domination of the perennials (Table 2, Fig. 1) followed by annual species, being in correlation with the explications from the bioforms.

Table 2.The Life expectancy analysis.
Tabel 2. Analiza duratei de viaţă**.**

No	Life expectancy	No. taxa	No	Life expectancy	No. taxa
1.	**Perennial**	653		Annual by winter	3
	Perennial (Biennial)	1		Annual by winter-Biennial	2
	Total	**654**		**Total**	**293**
2.	**Annual**	223	**3.**	**Biennial**	39
	Annual-biennial	35		Biennial-perennial	20
	Annual-by winter	20		Biennial (annual-perennial)	1
	Annual-perennial	10		**Total**	**60**

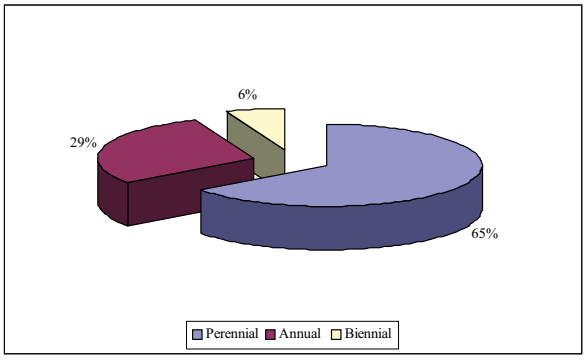

Figure 1. The Life expectancy spectrum.
Figura 1. Spectrul duratei de viaţă.

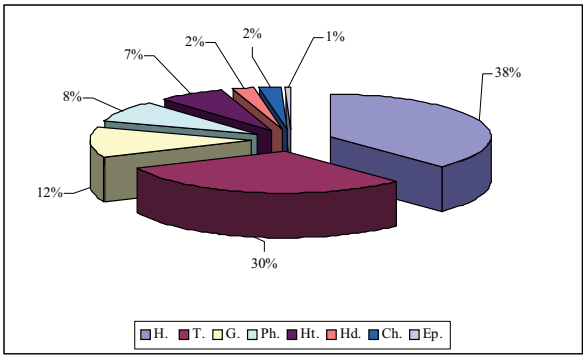

Figure 2. The bioforms spectrum.
Figura 2. Spectrul bioformelor.

The bioforms analysis

The domination of the hemicriptophytes shows a moderate climate, with the abundance of the herbaceous formations edified by the perennial Poaceae. The fact that these are followed by the terrophytes shows the degree of aridization of the zone and the effects of the anthropization on the vegetation and flora, and the geophytes reveal the short periods of vegetation because of the alternation between the drought and rainy seasons, registered in the last years. The increasing of the importance of these compared to the percent of 8% that the phanerophytes register, clearly indicates the installation of the secondary vegetal groups, consequence of the clearing of the forests (Table 3, Fig. 2).

Table 3. The bioforms analysis.
Tabel 3. Analiza bioformelor.

No.	Bioform	No. taxa	No.	Bioform	No. taxa	No.	Bioform	No. taxa
1.	**H.**	365		T-Ht., H	1	**5.**	**Ht.**	42
	H.(HH.)	10		**Total**	**314**		Ht.-H.	23
	H.(Ch.)	8	**3.**	**G.**	101		Ht.-Ch.	1
	H.(G.)	8		G. (HH.)	16		Ht.(T.-H.)	1
	Total	**392**		G. (H.)	4		**Total**	**67**
2.	**T.**	216		**Total**	**121**	**6.**	**Hd.**	15
	T.-Ht.	52	**4.**	**Ph.**	54		HH.	8
	T.-H.	5		MPh. (tree)	19		Higr.-Hidr.	1
	T. (HH.)	4		mPh. arbust	6		**Total**	**24**
	T.- Ht.-H.	3		mMPh. (shrub-tree)	5	**7.**	**Ch.**	19
	T.-H. (HH.)	2		MPh. creeper	3		Ch.-H.	2
	T.-Ch.	1		**Total**	**87**		**Total**	**21**
						8.	**Ep.**	**7**

The analysis of the ecological parameters

The analysis of the ecological parameters leads us to the emphasizing of the ecological particularities of all the plant species from the studied field, allowing us in this way to establish the reports regarding the complex of local pedological-climatic factors.

The analysis of the soil humidity spectrum (Table 4, Fig. 3) reveals the fact that on the apparent mesophilous nature of the zone emphasizes the domination of the xeromesophilous-mesophilous elements, main characteristic that defines the intermediary position of the studied field, with southern influences emphasized by the presence of the

xerophile-xeromesophilous on the one hand, on the other the influences from the north-west, wetter, emphasized by the mesophilous-mesohygrophilous elements. The rate of 3% of the registered hygrophyle species emphasizes the secondary place that is occupied by the vegetation from the valleys. The aquatic vegetation is weakly represented in this context.

Table 4. The analysis of the soil humidity spectrum.
Tabel 4. Analiza umidității solului.

No.	Soil humidity level	No. taxa	No.	Soil humidity level	No. taxa	No.	Soil humidity level	No. taxa
1.	**U_2**	137	**3.**	**U_4**	51	**6.**	**U_6**	30
	U_{2-3}	264		U_{4-5}	81		**Total**	**30**
	$U_{2-3\ (4)}$	8		**Total**	**132**	**7.**	U_{2-4}	6
	$U_{2(3)}$	1	**4.**	**U_1**	**1**		U_{2-5}	3
	Total	**410**		U_{1-2}	60		U_{1-4}	3
2.	**U_3**	177		**Total**	**61**		U_{1-5}	2
	U_{3-4}	129	**5.**	**U_5**	33		U_{3-5}	2
	$U_{3-4\ (5)}$	1		U_{5-6}	8		U_{1-3}	1
	Total	**307**		**Total**	**41**		**Total (U_{1-5})**	**17**

The spectrum of the temperature (Table 5, Fig. 4) emphasizes the domination of the mesotherme, followed closely by the subthermophile, fact that proves the mesothermophilous-subthermophilous character of the studied field, in concordance with the climate and the physic-geographic position of the basin. The eurithermes have a considerable importance. The thermophile influences are weakly represented but are felt in the general context of the climate.

Table 5. The analysis of the temperature.
Tabel 5. Analiza temperaturii.

No.	Temperature	No. taxa	No.	Temperature	No. taxa	No.	Temperature	No. taxa
1.	**T_3**	445	**3.**	**T_{2-5}**	51		**Total**	**102**
	T_{3-4}	98		T_{3-5}	35	**4.**	**T_2**	**14**
	Total	**543**		T_{2-4}	6		T_{2-3}	21
2.	**T_4**	275		T_{1-4}	4		**Total**	**35**
	T_{4-5}	32		T_{1-5}	4	**5.**	**T_5**	11
	Total	**307**		T_{1-3}	2		**Total**	**11**

The reaction of the soil (Table 6, Fig. 5) emphasizes the presence of weak acid-neutrophilous species in large number, fact that proves the stability of some groups of coenoses regarding the characteristics of the eu-mesobasic soils, although it exists a big percent of unstable species (the euriionic). The presence of the acid-neutrophilous and weak alkaline species is explicated by the local particularities of the substratum and relief.

Table 6. The reaction of the soil analysis.
Tabel 6. Analiza reacției solului.

No.	Acidity level	No. taxa	No.	Acidity level	No. taxa	No.	Acidity level	No. taxa
1.	**R_4**	416	**3.**	**R_{2-5}**	107	**4.**	**R_5**	21
	R_{4-5}	85		R_{3-5}	49		**Total**	**21**
	Total	**501**		R_{2-4}	10		**R_2**	1
2.	**R_3**	145		R_{1-5}	9	**5.**	R_{2-3}	10
	R_{3-4}	140		R_{1-4}	2		$R_{2-3\ (4)}$	1
	Total	**285**		R_{1-3}	1		R_{1-2}	1
				Total (R_{1-5})	**178**		**Total**	**13**

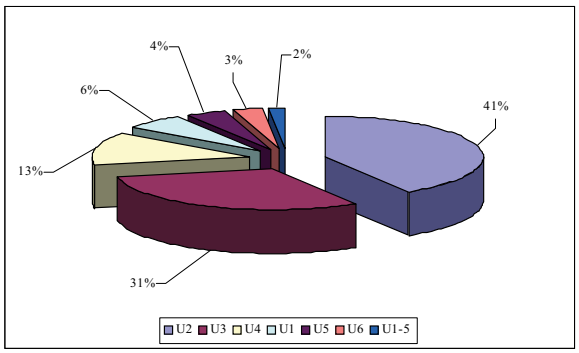

Figure 3. The soil humidity spectrum.
Figura 3. Spectrul umidității solului.

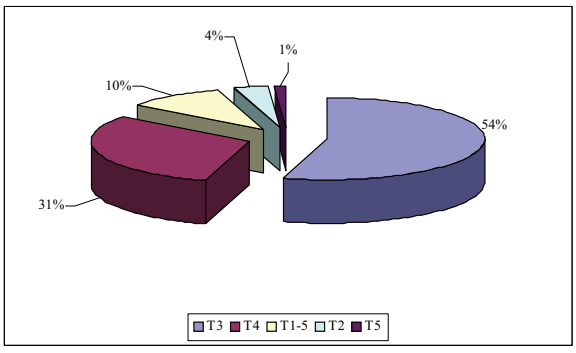

Figure 4. The heat level spectrum.
Figura 4. Spectrul temperaturii.

The analysis of the geoelements

The analysis of the geoelements (Table 7, Fig. 6) emphasizes the big importance of the European species (26%) in the context of the domination of the Eurasian (38%), group characteristic to the general phytogeographic context. Relevant are the central Europeans that, through their participation percent (14%), sustain the location of the studied field in the central European region.

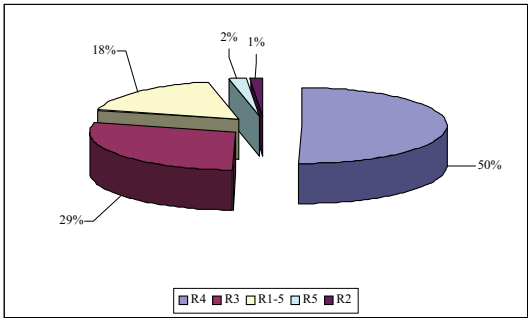

Figure 5. The reaction of the soil spectrum.
Figura 5. Spectrul reacţiei solului.

It seems that all the other elements have a balanced participation rating, from these being emphasized the Circumpolars, their existence probably being connected with the different postglacial phases, when they migrated from the alpine; Submediterraneans and Mediterranean's have found here softer conditions, being helped by the valleys of the Motru's tributaries that have a south-western and north-western orientation. The Submediterranean-Mediterranean, Balkan and autochthon elements are weakly represented from the percentage point of view, but as populations are well represented, some of them forming associations. The presence of the Pontic elements, more abundant in the Balacita Plain, is connected with the intensity of the influences from north-east, south-east. The other elements are weaker represented, as it is emphasized in the table below (Table 7). The large number of Meridional elements (Fig. 7), identified on the researched territory, imprint a specific, hard to interpret, character to the phytocoenoses.

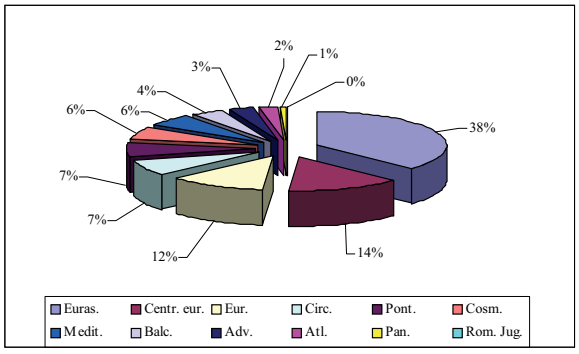

Figure 6. The geoelements spectrum.
Figura 6. Spectrul geoelementelor.

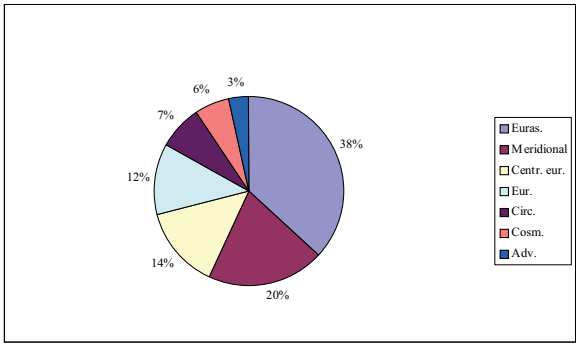

Figure 7. The Meridional elements balance sheet.
Figura 7. Bilanţul elementelor meridionale.

Table 7. The reaction of the soil analysis.
Tabel 7. Analiza reacţiei solului.

No.	Geoelement	No. taxa	No.	Geoelement	No. taxa
1.	**Euras.**	268		Pont.-pan.-balc.	16
	Euras. cont.	64		Pont.-centr. eur.-medit.	5
	Euras. (submedit.)	18		Pont.-pan.	4
	Euras. de S	3		Pont.-balc.	3
	Euras. medit.	3		Pont.-medit.-pan.	1
	Euras. (mont.)	2		Pont.-pan.-medit.	1
	Euras. submedit.	2		**Total**	**66**
	Euras. (Am. de N)	2	**6.**	**Cosm.**	**61**
	Euras. (presently cosm.)	1	**7.**	**Medit**.	41
	Euras. (cosm.)	1		Submedit.	14
	Euras. (medit.)	1		Medit. (cosm.)	2
	Euras. centr.	1		Medit. -carp.-balc.	1
	Euras. de N.	1		Medit. -submedit.	1
	Euras. (Tertiary relict)	1		Submedit.-medit.	1
	Euras. (subatl.-submedit.)	1		**Total**	**60**
	Total	**369**	**8.**	**Balc**.	17
2.	**Centr. eur.**	57		Balc.- pan.	8
	Eur. centr.-medit.	23		Carp.-balc.	6
	Eur. centr. şi de S	11		Carp. -balc.-cauc.	2
	Eur. centr. şi de SE	11		Dacic.	2
	Eur. centr.-submedit.	9		Daco.-balc.	2
	Eur. centr. şi de V	7		Daco.-balc.-pan.	1
	Eur. centr. şi de SV	6		Balc.-danub.-pont.	1
	Eur. centr.-submedit.-atl.	4		Alp.-carp.-balc.	1
	Eur. centr. (submedit.)	3		Carp.-balc.-pan.	1
	Eur. centr. şi de E	3		**Total**	**40**

	Eur. centr.-atl.-medit.	2	**9.**	**Adv.** (Am. de N)	19
	Eur. centr.-subatl.	2		Adv. (Am. de S)	2
	Centr. eur.- balc.-cauc.	1		Am. de N.	2
	Eur. centr. şi de S, As. de SV	1		Adv. (Am. de N) presently Cosm.	1
	Eur. centr.-atl.	1		Adv. (Am. de N şi S)	1
	Eur. centr. şi N.	1		Adv. (Am. de S) presently Cosm.	1
	Eur. centr.-subatl.-submedit.	1		Adv. (Am. de S şi Peru) presently Cosm.	1
	Eur. centr.-pont.	1		Adv. (Am. trop.)	1
	Eur. centr.-pont.-medit.	1		Adv. (As. de SV)	1
	Centr. Eur.-balc.	1		Adv. (As. NE, Am de N?)	1
	V, Centr. Eur.-medit.	1		Adv. (Medit. de E.)	1
	Total	**144**		As. de V. (Cosm.)	1
3.	**Eur.**	95		As. de SV	1
	Eur. cont.	8		**Total**	**33**
	Eur. de S.	5	**10.**	**Atl**.-medit.	17
	Eur. (submedit.)	3		Atl.-submedit.	1
	Eur. (mont.)	2		Atl.-centr.-eur.-medit.	1
	Eur. de SE.	2		Subatl.-submedit.	1
	Eur. (excepţie N)	2		Subatl.-submedit-centr. eur.	1
	Eur. de S. (mont.)	1		**Total**	**21**
	Eur. de S. (Africa de N.)	1	**11.**	**Pan**.	6
	Eur. SE., As. Centr.	1		Pan.-balc.	1
	Eur. medit.	1		**Total**	**7**
	Total	**121**	**12.**	**Rom. Jug.**	**1**
4.	**Circ.**	**74**			
5.	**Pont.**	8			
	Pont.-medit.	28			

The phytogeographic situation of the studied field

According to the last classification (CIOCÂRLAN, 2000), based on the geographic position of Romania and on the criterions: floristic, pedological-geographic, climatic, geo-morphological and physic-geographic and ecological, the studied field is situated at the border between two provinces and districts (Fig. 8) thus:

Central European Region

Carpathian Province (Fig. 8-4)

SubCarpathian Subprovince (Fig. 8-4.2)

District of Getic Subcarpathians-between Negoesti and Motru (Fig. 8-4.2.3)

The Danubian-Getic Province (Fig. 8-5)

The district of the Getic Plateau-between Motru and Gura Motrului (Fig. 8-5.1)

All these elements are in correlation with the types and the division into zones of the vegetal groups identified in the studied zone. So, the division into zones of the vegetation on vertical brings up numerous problems in the studied field, situation emphasized in the Upper Basin of the Motru River too (MALOŞ, 1977).

Nevertheless, it can be told that the studied field mostly belongs to the nemoral zone (Oak forest's zone) - between 110-300 m height, between Motru and Gura Motrului.

In this zone, the main woody vegetal formations are the Turkish oak and Hungarian oak forests (*Quercetum frainetto-cerris*), characteristic to the *Quercetea pubescentis* class, in whose area there are settled secondary (after the clearing of the forests) dry meadows characteristic to the *Festuco-Brometea* class, edified by the steppe hairgrass (*Festuca valesiaca*) and the furrowed hairgrass (*F. rupicola*), fragmented by blackthorn and hawthorn boscages (*Pruno spinosae-Crataegetum*).

The mesophilous everglade vegetations characteristic to the *Querco-Fagetea* class is weakly represented, with a fragmentary character, the more representative woody vegetal formations being found in the high everglade of the Motru River and his principal tributaries (the Huşniţa and the Coşuştea). These are represented by pedunculate oak forests (*Quercus robur*), in which it has been identified as principal association *Convallario majalis-Quercetum roboris*, and on small areas, in floodable places, temporary sloppy, based on the clearing of the pedunculate oak, there are settled the phytocoenosis edified by *Fraxinus excelsior*, *F. angustifolia* subsp. *oxycarpa* and fewer *F. pallisiae*, situated in the *Querco robori-Fraxinetum* association.

Between the altitudes 300-380 m, they frame at the lower limit of the common oak sublevel, from the nemoral level (of the deciduous forests), being continued in the Upper Basin of the Motru River to 1.000 m height (MALOŞ, 1977).

In the studied field, between Motru and Negoiesti, we can not talk strictly about a sublevel characteristic to the Subcarpathian hills, because the woody vegetal formations that form the forests from this transition zone have a mixed character, in their composition being met all the three oak species (*Quercus dalechampii, Q. polycarpa, Q. petraea*), in which *Fraxinus ornus*, *Tilia tomentosa* participate, as well as the infiltration of *Quercus cerris, Q. frainetto*, which gives the transition character of these forests. The association that is identified within these forests is *Potentillo micranthae-Quercetum dalechampii* HORVÁT 1981 (COSTACHE, 2005, 2007), being an association of transition between

the downy oak (*Quercus pubescens*), characteristic to the forest steppe zone, and the mesophilous one characteristic to acid oak forests met in the Subcarpathian hills.

These difficult combinations are also pointed by ROMAN, 1974, in the south of the Mehedinti Piedmont; therefore he did not described associations from these forests.

The grassy layer of these forests is generally poor, composed of: *Melica uniflora, Poa nemoralis, Lathyrus niger, Galium schultesii*, as well as the central European-Mediterranean recognition species *Potentilla micrantha.*

The durmasts' clearing has led to the extension of the juniper boscages, *Juniperus communis*, and on the very extended surfaces there are acacia plantations.

In the area of these forests, the principal meadows are the ones edified by the grass of the field (*Agrostis capillaris*). Because of the presence of the red fescue (*Festuca rubra*) in this zone, we have considered adequate the differentiation of the association *Festuco rubrae-Agrostetum capillaris* HORVAT, 1951.

In this sublevel, as mesophilous wooden vegetal formations, during the short valley with temporary stream, on northern expositions, are met moesic beech forests, framing them provisionally in the association *Helleboro odori-Fagetum moesiacae* SOÓ & BORHIDI in SOÓ 1960 (COSTACHE, 2005, 2006; COSTACHE & NICOLAE, 2009), on the basis of the nucleus of Balkan elements, which prove the origin connections with the old forests that were populating the Balkan-Crimean-Dobroudja hills and the ones from Oltenia, in this way differentiating them of the mountainous beech forests (BORZA, 1957). Eliminating the beech from these phytocoenoses settles down secondary the association *Carici pilosae-Carpinetum* NEUHÄUSL & NEUHÄUSLOVÁ-NOVOTNÁ 1964 em. BORHIDI 1996. These come in contact with small phytocoenosis of *Populus tremula* and *Corylus avellana*. The *Castanea sativa* and *Corylus colurna* species are seldom met here.

In the intrazonal vegetation, the acacia and poplar riverside coppices are representatives. Within the framework of these it had been described the *Salicetum albae* ISSLER sensu lato association, beside which, in the rivers' gravel, there are willow groves of red osier (*Salicetum purpureae*).

The riverside coppices of common alder, located during the narrow valleys of the Motru's tributaries and sporadically in the Motru's meadow, are weakly represented. From their framework it has been described the *Aegopodio-Alnetum glutinosae* association, in whose structure it has been identified only one relevé with *Matteuccia struthiopteris,* at the superior limit of the researched territory, on the Pestrita valley.

In the high meadows and on the first terraces of the hills there are mesophilous-mesohygrophilous associations, some of them forming lawns on extended surfaces (*Festucetum pratensis, Agrostetum stoloniferae*), and others are located on smaller surfaces, *Poëtum pratensis, Agrostetum caninae*; with Submediterranean character it is met the *Poëtum sylvicolae* association, well known and studied in Oltenia. On the temporary marshy fields, a special peculiarity is represented by the presence of the Mediterranean species *Cirsium creticum,* which, in the Motru's Basin is more abundant in the phytocoenosis edified by *Carex hirta*, giving them an apart specific character, therefore we propose as regional subassociation *Cirsietosum creticae* COSTACHE 2005 (COSTACHE, 2005, 2008) in the framework of the *Caricetum hirtae* association.

The aquatic and swamp vegetation is weakly represented, being met especially in the Motru's meadow between Motru and Gura Motrului.

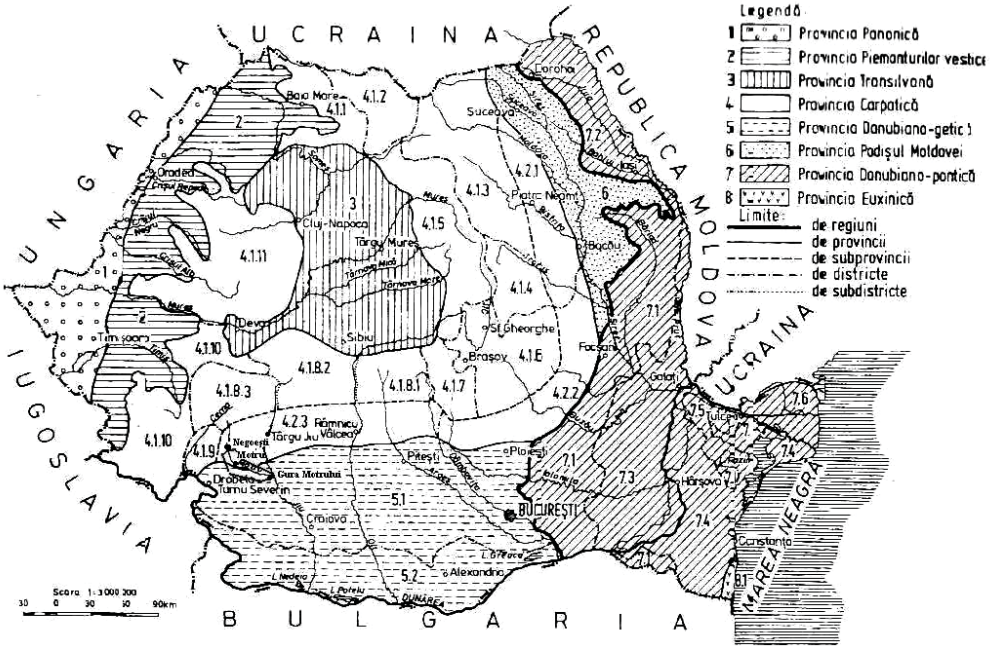

Figure 8. The floristic Provinces of Romania (by CIOCÂRLAN, 2000).
Figura 8. Provinciile floristice ale României (după CIOCÂRLAN, 2000).

The high meadows of the rivers as well as the hills' low and middle terraces have a fragmentary aspect because of the agriculture, fact that influences the composition and the dynamics of the phytocoenosis of herbaceous species associations too, in the sense of the penetration of numerous species of segetal and ruderal weeds, giving them a pronounced character of ruderalization.

CONCLUSIONS

In conclusion, the floristic diversity and implicit the complexity of the vegetal groups existing in the researched area is due to physical-geographical, pedological-climatic and phytogeographical peculiarities, situation pointed out by ROMAN, 1974, in the south of the Mehedinti Plateau, and also by MALOŞ, 1977, in the Upper Basin of the Motru, of course with certain apart peculiarities.

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