

THE CIRSIETOSUM CRETICAE SUBASSOCIATION NOVA

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Abstract. The sub-Mediterranean influences are very strong in the Lower Basin of the Motru River and, in fact, throughout the south-western part of Romania. In this context, the Mediterranean species, *Cirsium creticum*, forms well-developed populations, tending to expand, being found in mesohygrophile coenoses from the water meadows. On the basis of their stational characteristics, spreading regions and qualitative and quantitative phytocoenologic indices, *cirsietosum creticae* has differentiated itself as a new subassociation within the phytocoenoses dominated by *Carex hirta*. The phytocoenoses are installed in the region of meso-hygrophile meadows (*Agrostion stoloniferae*), which have gained a deep character of ruderalization owing to irrational grazing. These characteristics confer phytocoenoses a status of an intermediary stage in the coenoses dynamics to their climax stage.

INTRODUCTION

From the geographical point of view, the Lower Basin of the Motru River lies in the western part of the Getic Piedmont (Map 1), with the coordinates: 44° 55' north latitude and 23° 45' east longitude. The studied area is 691 Km². From the administrative-territorial point of view, the territory under research is located at the borderline between the counties of Gorj and Mehedinți District - the borderline starts in the eastern part of the Negoesti Hills (Comanesti-Mehedinți, altitude 388 m) and reaches Jiului 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. Complex studies regarding the meadows from Oltenia have been made by the staff of the Botanic Department within the University of Craiova ever since the Agronomic Teaching appeared in Craiova (starting with 1984), the staff being represented by: Buia Al., Păun M., Pavel C., Maloș C., Popescu Gh., Zaharia I., Cărtu D. etc. In the territory under research, there have been made floristic and phytosociological studies between 1997 and 2005, within the PhD thesis (Costache, 2005a). In the lower Basin of the Motru River, the praticole ecosystems (but not only) are deeply influenced by the anthrop-zoogenous factors (intensive and irrational grazing, which led to the clearing of the meadows, destroying the good fodder graminess and enlarging the cesspit graminess with no fodder value), caused the appearance of numerous ruderal and segetal species that brought to the phytocoenoses a deep character of ruderalization, a change of the floristic composition and its characteristics.

MATERIAL AND METHODS

In the study of the vegetation, the association was considered the basic coenotaxonomic unit, which was understood in the spirit of the Central-European School, but it was also taken into account the new direction in defining the association as a “fundamental unit of phytosociology, an abstract concept which is reflected in an assembly

of association individuals that mutually possess almost the same floristic, statistic, ecologic, dynamic, chorological and historical features” (Géhu, 1992). The study of the phytocoenoses and of the vegetal associations was carried out by using the method of the phytocoenologic surveys; processing the data from the individual files in order to obtain synthetic tables for association analysis was carried out according to the model presented by Ivan (1979), the basis being represented by the methodology offered by Braun-Blanquet and adapted to the vegetation particularities in our country (Borza, 1959), the abundance-dominance (AD) scale with 6 gradations and constancy (K) with 5 classes by frequencies (I: 1-20%; II: 21-40%; III: 41-60%; IV: 61-80% and V: 81-100%). The coenotaxonomic belonging of the species, as well as their affiliation to high-leveled coenotaxonomic units were made according to Borhidi (1995, 1996); Mucina (1997); Soó (1980); Rodwell et al. (2002) etc.

RESULTS AND DISCUSSION

MOLINIO-ARRHENATHERETAEA R. Tx. 1937

MOLINIETALIA W. Koch 1926

Agrostion stoloniferae Soó (1943) 1971

The alliance group the meso-hygrophyle phytocoenoses met along the rivers in the Lower Basin of the Motru River. Some hygrophyle species characteristic to the alliances such as: *Phragmition*, *Bolboschoenion*, often appear in some stations, as a result of a long time water stagnation.

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The classification of phytocoenoses dominated by *Carex hirta* populations permanently arise discussions and contradictions. Thus, Soó (1927) considers that these populations form associations and sinuzies and names it *Caricetum hirtae*, but later he changes his mind. In Romania, *Carex hirta* populations are poorly studied, there are few works depicting them: Puşcaru-Soroceanu et al. (1963); Dihoru (1975); Nedelcu (1978); in the region of Moldavia: Mititelu (1975); Mititelu et al. (1974, 1975, 1977) and Burescu (2003) in the north-western part of Romania. Dihoru (1975) quotes the association of Soó (1927) and comes forth with an association diagnosis, realized on basis of 4 abstracts (as well as of the stationary characteristics), according to whom the association is subordinated to *Agropyro-Rumicion* alliance. Sanda et al. (2001) classifies *Carex hirta* phytocoenoses in the subassociation: *caricetosum hirtae* (Syn.: *Caricetum hirtae* Soó 1927) subordinated to the association *Rorippo austriacae-Agropyretum repentis* (Timár 1947) R. Tx. 1950 from the alliance *Potentillion anserinae* R. Tx. 1937. Burescu (2003), on basis of CNP (Barkman et al., 1986), invokes article 3b, article 46, article 47, the recommendation 47 A, and consider named nudum the association named by Soó (1927), because it has not been described before and proposes the redefinition of the association. Following the comparative analysis of the two descriptions effectuated by: Dihoru (1975) and Burescu (2003), with the characteristics of our phytocoenoses, either similitudes but also differences can be noticed. The similitudes consist of the existence of common elements characteristic to *Agrostion stoloniferae*, *Calthion*, *Molinietalia*, *Phragmitetalia* alliance and to *Molinio-Arrhenatheretea* class. The differences consist of the fact that *Cirsium creticum*, as well as other sub-Mediterranean or Mediterranean elements characteristic to this region appear in no floristic list. In *Carex hirta* populations on Siriu Mountain, the presence of *Cirsium palustre* species is mentioned, together with the following differential ecological species: *Agrostis capillaris*, *Calamagrostis pseudophragmites*, *Deschampsia caespitosa*. Consequently, we consider the proposal to constitute a new subassociation being highly opportune, *cirsietosum creticae* subass. nova

(holotypus in hoc loco: Tab. 1, relevé no. 9), on basis of the differential phytogeographical but also quantitative (abundance-dominant) and qualitative (constancy) elements. In the researched territory, the phytocoenoses are often met along the slope springs, in marshy fields, from the first terrace of the hills, at the interference with the high meadow of Motru, in the area between Glogova and Gura Motrului. The soils are of alluvial gleic or brown clayish-illuvial gleic type, characteristic to the associations in *Phragmitetea* class. The surfaces occupied by these phytocoenoses are comprised between 20-300 m², situated between the leas of *Agrostis stolonifera*, *Festuca pratensis* (fig. 1) and the sedge phytocoenoses (*Caricetum acutiformis*, *Caricetum ripariae*). In the biotops in which the water stagnates longer floral elements characteristic to *Phragmition* alliance appear. On the other hand, black alder phytocoenoses (*Alnus glutinosa*) are also met in a lot of stations, depending on the grade of swampy soil. This spatial distribution suggests the sindynamic relationships among *Agrostetum stoloniferae*, *Caricetum acutiformis*, *Caricetum ripariae*, *Alnetum glutinosae*. The basis of these arguments is given by the presence of the species characteristic to the coenotaxonomic units distinguished in the table no. 1. The floristic list includes 106 taxons among which 97 tracheophytes and 9 bryophytes. In the table, besides the distinguishing of the nucleus of the species characteristic for the alliance, order and class, we have also distinguished the principal groups of species characteristic for other coenotaxonomic units which the phytocoenoses come in contact with (*Calthion*, *Magnocaricion*, *Alno-Ulmion* and *Phragmitetalia*). At variasyntaxa there are some species less faithful and characteristic for the sub-association phytocoenoses, met in more coenoses types, some of them being, yet, connected to the soil humidity. The physiognomy of these phytocoenoses is characteristic and personalized by the presence of *Cirsium creticum* Mediterranean species, which forms the first layer (1,80-2 m) with a covering degree of up to 60% in the most representative populations). In the same layer, but having lower height the Eurasian species are present: *Eupatorium cannabinum*, *Epilobium hirsutum*. The second layer is the most representative one (between 20-80 cm), in which, beside the ruling and illustrative species *Carex hirta*, there species characteristic for the alliance, order and class. In some phytocoenoses, the participation ratios between graminées and cyperaceae in the composition of this layer are very varied, imprinting thus a transitory character and an uncertainty in identifying them as association. The inferior layer is made up of few species owing to the high covering degree and, as a result, the shade they make. The bryophytes are also included, among which some are often met in the hygrophyle phytocoenoses. The analysis of the principal ecological indices focuses the hemicriptophytes domination followed by the geophytes, which expresses the rootedness degree of these phytocoenoses; the meso-hygrophytes domination followed by the hygrophytes. The thermal characteristics are reverberated through the domination of the meso-thermes followed by the sub-thermophyle species. The geoelements specter shows the eurasians domination, followed by the circumpolars and europeans. The elements justifying the particular characteristic of this region, such as: sub-Mediterraneans, Mediterraneans, followed by the Balkan-Pannonics and Pontics are also present.

CONCLUSIONS

In this material, a new subassociation *Cirsietosum creticae* has been propos on the basis of their stationnal characteristics, spreading regions and qualitative and quantitative phytocoenologic indices. The phytocoenoses are installed in the region of meso-hygrophyle meadows (*Agrostion stoloniferae*), which have gained a deep character of ruderalization owing to irrational grazing. These characteristics confer phytocoenoses a status of an intermediary stage in the coenoses dynamics to their climax stage.

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Table 1

Biof.	U	T	R	Geoelem.	Relevé no.	1	2	3	4	5	6	7	8	9	10	K
					Altitude (m.s.m.)	150	200	150	180	250	180	230	300	300	300	
					Slope (degrees) (⁰)	-	5	-	5	-	-	10-20	-	-	-	
					Aspect	-	N	-	N	-	-	E	-	-	-	
					Surface (m ²)	100	100	100	50	50	50	25	100	100	100	
Covering (%)						100	100	100	100	100	100	100	100	100	100	
Characteristic species of association																
G.	3-4	3	3-5	Circ.	Carex hirta	5	3	2	3	4	4	3	2	2	2	V
Characteristic species of subassociation																
G.	4-5	4	4-5	Medit.	Cirsium creticum	+	1	3	2	+	1	1	3	3	3	V
Agrostion stoloniferae & Molinietaalia																
H.	4-5	3-5	2-5	Circ.	Agrostis stolonifera	-	+	+	-	1	1	1	+	+	+	V
H.	4	4	4	Submedit.	Poa sylvicola	-	+	+	+	+	+	-	+	+	+	IV
H.	4-5	4	3-4	Euras.	Juncus inflexus	+	+	+	+	-	+	-	-	-	+	III
H.	4-5	3	4	Euras.	Mentha longifolia	+	-	-	-	+	+	-	+	+	+	III
H.	4-5	2-5	2-5	Euras.	Ranunculus acris	-	-	-	-	+	+	-	+	+	+	III
H.	4-5	3	3-4	Cosm.	Juncus effusus	-	-	-	-	+	+	-	-	+	+	II
Calthion palustris																
G.	4-5	2-3	1-5	Circ.	Equisetum palustre	-	-	-	-	+	+	-	-	+	+	II
H.	4-5	4	3-4	Circ.	Poa palustris	-	+	+	-	+	-	-	-	-	-	II
H.	4-5	2-4	2-3	Circ.	Epilobium palustre	-	-	-	-	-	-	-	+	+	+	II
H.	4-5	3	3	Euras.	Lysimachia vulgaris	-	+	+	-	-	-	-	-	+	+	II
G.	5	4	4-5	Circ	Scirpus sylvaticus	-	+	-	-	+	-	-	-	-	-	I
Molinio-Arrhenatheretea																
H.	3-4	3	2-5	Cosm.	Holcus lanatus	-	-	-	-	+	+	+	+	+	+	IV
H.	3-4	3	3-4	Balc.-pan.	Plantago altissima	-	+	+	-	+	+	-	+	+	+	IV
H.	3-4	2-5	2-5	Euras.	Trifolium repens	+	+	-	-	+	+	-	-	+	+	III
H.	3-4	2	3	Euras.	Stellaria graminea	-	+	-	-	+	+	-	+	+	+	III
H.	3-4	2	3-5	Euras.	Festuca pratensis	-	-	-	-	+	+	-	+	+	+	III
H.	3-4	3	4	Centr. eur.	Pulicaria dysenterica	+	+	+	+	-	+	-	-	-	-	III
T.	3-4	4	4	Medit.	Trifolium patens	-	-	-	-	-	-	+	+	+	+	II
H.	3-4	4	4-5	Pan.	Achillea asplenifolia	-	+	+	-	-	-	-	+	-	-	II
H.	3-4	4	4	Pont.-medit.	Galega officinalis	-	+	+	-	+	+	-	-	-	-	II
H.	3-4	2-5	3-5	Circ. (Cosm.)	Poa pratensis	-	-	-	-	+	+	-	-	-	-	I
H.	3-4	3	2-5	Euras.	Serratula tinctoria	-	+	+	-	-	-	-	-	-	-	I

Magnocaricion elatae															
H.	5	3	3-5	Eur.	Galium palustre subsp. elongatum	+	+	+	-	+	+	-	+	+	IV
H.	5	3	4-5	Euras.	Carex otrubae	-	-	-	-	+	+	-	+	+	III
H.	4-5	3	3-4	Euras.	Carex vulpina	-	1	+	-	-	-	-	+	-	III
H.	4	3	4	Circ.	Scutellaria galericulata	-	+	-	-	+	-	-	-	-	I
Ht.	3-4	4	4-5	Atl.-medit.	Apium graveolens subsp. graveolens	-	+	+	-	-	-	-	-	-	I
Phragmitetalia															
H.(HH.)	4-5	3	2-5	Euras. cont.	Lycopus exaltatus	-	-	-	-	-	-	-	+	+	II
H.	4-5	4	4	Eur.	Hypericum tetrapterum	-	+	+	-	-	-	-	+	-	II
Hd.	5	3	4	Euras.	Sium sisarum var. lancifolium	-	+	+	+	-	-	-	-	-	II
H.(HH.)	5	3	2-5	Eur.	Mentha aquatica	-	+	-	+	-	-	-	-	+	II
Alno-Ulmion															
G.	4	2-3	2	Circ.	Equisetum telmateia	-	1	+	-	1	+	-	+	+	IV
H.	4-5	3	3	Euras.	Epilobium hirsutum	-	+	+	-	+	+	-	-	-	III
H.	4	3	4-5	Euras.	Eupatorium cannabinum	-	+	+	+	+	+	-	-	-	III
Variasyntaxa															
H.	4-5	2-3	3-5	Circ.	Lythrum salicaria	+	-	+	-	+	-	+	-	+	III
H.	3-4	4	3-4	Euras.	Potentilla reptans	-	+	-	+	-	+	-	+	+	III
H.	4-5	4	4	Circ.	Rumex conglomeratus	+	+	-	-	+	+	-	-	+	III
Ch.	4	3	3	Euras., Am. de N.	Lysimachia nummularia	-	+	-	-	+	+	-	+	+	III
H.	4-5	4	4	Euras. cont.	Althaea officinalis	-	+	-	-	-	-	+	+	+	III
H.	4-5	1-5	1-5	Euras.	Ranunculus repens	+	+	-	-	+	+	-	-	+	III
Bryophyta															
					Plagiomnium undulatum	-	2	1	1	2	2	2	2	2	V
					Brachythecium albicans	-	1	1	1	+	+	-	+	+	IV
					Leptodictyum riparium	-	+	+	+	+	-	-	+	-	IV
					Drepanocladus aduncus f. aquaticus	-	-	-	+	+	+	-	+	-	III
					Amblystegium tenax	-	-	+	-	+	-	-	+	+	III

Place and date of the releves: **1.** The Gura Motrulului Nunnery, Gura Motrulului, 20.VII. 2000; **2.** The Motrulului Valley, Broșteni, 06.VIII.2001; **3.** The Motrulului Valley, Meriș, 06.VIII.2001; **4.** Poiana Rizei, Cleșnești (Glogova), 09.VII.2002; **5.** Comanda, 30.VIII.2003; **6.** The Peșteana Valley, Broșteni, 06.IX.2002; **7.** Ciochiuța (Strehaia), 01.VII.2003; **8.** Molani (Bala), 23.VII.2004. **9.** Bratovoiești (Bala), 23.VII.2004. **10.** Comănești (Bala), 23.VII.2004.