STUDIES CONCERNING ROCK FLORA IN THE GLOB GORGES NATURE RESERVE

STUDII PRIVIND FLORA (DE STÂNCĂRIE) DIN REZERVAȚIA NATURALĂ CHEILE GLOBULUI

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Abstract: *The Glob Gorges Nature Reserve is located in the hydrographical basin of the Craiova River, near Globul Craiovei (Caraş-Severin County). The reserve is located in the piedmont depression of Mehadia, at the southern terminals of the Semenic Mountains, as part of the large tectonic passage Timiş-Cerna. Though located in the neighbourhood of other nature reserves in southern Banat – the Caraş Gorges, the Gârlişte Gorges, the Nera Gorges, the Miniş Gorges, and the Rudăria Gorges – it has been less studied, and there is no complete presentation of its flora and vegetation of the nature reserve.*

Rezumat: *Rezervaţia naturală „Cheile Globului" este situată în bazinul hidrografic al râului Craiova, lângă localitatea Globul Craiovei din judeţul Caraş-Severin. Rezervaţia este situată în depresiunea piemontană a Mehadiei, la terminaţiile sudice ale masivului Semenic, încadrându-se în marele culoar tectonic Timiş-Cerna. Deşi situată în vecinătatea altor rezervaţii din sudul Banatului: Cheile Caraşului, Cheile Gârliştei, Cheile Nerei, Cheile Minişului, Cheile Rudăriei a fost mai puţin studiată, lipsind o prezentare completă a florei şi vegetaţiei din rezervaţie.*

Key words**:** *nature reserve, rock flora*
Cuvinte cheie: *rezervaţie naturală, floră de stâncărie*

INTRODUCTION

The Globe Gorges have been made up by the water of the Craiova Rivulet, not of calcium deposits, but of grey shale, mica-shale, and gneiss crossed by veins of eruptive rock (pegmatite) (Scheuşan, 1978). The Craiova River has its source in the Semenic Mountains near the Nera's source and flows, after uniting its waters with those of the Mehadica Rivulet, into the Belareca River and, then, into the Cerna River. The Gorges are 2.5 km long, and a total area of 225 ha on both sides of the road linking Bozovici and Iablanița, and then Mehadia.

The researches geographical co-ordinates lay in the latitude $45^0$00' and in the longitude $21^0$15'. The reservation constituted was certified by the Decree number 499/1982, and the Decision number 8/1994 as a floristic, faunistic and geological reservation.

The relief is characterised by slopes having a different orientation, with abrupt slopes whose inclination is between 40^0 and 60^0, and reaching even up to 80^0. The abrupt slopes and abundant rainfalls result in very active erosion processes that, in their turn, result in a great diversity of the soil types. The main soil types are brown podzolic and brown acidic.

Climate type ranges within the sub-Mediterranean climate type whose influences are levelled by altitude and relief configuration. Annual average temperature is between 8^0 and 10^0C, average summer temperature is 20^0C, and average winter temperature is -3^0C. The average annual rainfall is below 700 mm; persisting snows are rather rare.

MATERIAL AND METHOD

Floristic researches were carried on by field observation in different period of the year, between 2003-2006. Plant communities are described in the spirit of Central-European

phyto-sociological school (Borza Al., Boşcaiu N., 1965). Species identification was done using the Flora României; the actual names of the species are noticed after Ciocârlan 2000 and Flora Europaea (electronic edition).

RESULTS AND DISCUSSION

Research on rock flora on the left slope along 2.5 km shows the presence of 211 species in the area. Analysing flora shows that it belongs to 43 botanical families, the best represented ones being Poaceae (26 species), Asteraceae (25 species), Fabaceae (22 species), Caryophyllaceae (20 species) and Rosaceae (15 species).

Flora overview:

Încrengătura Pteridophyta

Familia Equisetaceae

1. Equisetum pratense Ehrh. – G, Circ; $U_{3,5}T_{2,5}R_4$

Fam. Aspleniaceae

2. Asplenium septentrionale (L.) Hoffm. – H, Circ; $U_1T_3R_2$
3. Asplenium trichomanes L. – H, Cosm; U_3,T_0,R_4
4. Ceterach officinarum (L.) Willd – H, Atl-Med; $U_{1,5}T_5R_{4,5}$

Familia Athyriaceae

5. Cystopteris fragilis (L.) Bernh – H, Cosm; $U_{3,5}T_0R_0$

Încrengătura Angyospermatophyta

Familia Ranunculaceae

6. Ranunculus sardous Crantz. – Th(Th,H), Eur; $U_3T_3R_4$
7. Clematis recta L. – H, Euc (Pont-Med); $U_{2,5}T_3R_4$
8. Clematis vitalba L. – N-E, Euc(Med); $U_3T_3R_3$

Familia Moraceae

9. Morus nigra L. – M(MM), Med; $U_2T_{3,5}R_4$

Familia Cannabaceae

10. Humulus lupulus L. – H, Eua; $U_{3,5}T_3R_4$

Familia Fagaceae

11. Quercus cerris L. – MM-M, Med; $U_2,T_{3,5},R_3$

Familia Corylaceae

12. Carpinus orientalis Miller – M,Balc; $U_3,T_4,R_{4,5}$

Familia Caryophyllaceae

13. Cerastium banaticum (Rochel) Heuffel – Ch, Carp-Balc; $U_2,T_{4,5},R_4$
14. Cerastium glomeratum Thuill. – Th, Cosm; $U_{2,5},T_3,R_0$
15. Dianthus carthusianorum L. – H, Eur; U_2,T_5,R_5
16. Dianthus giganteus D'Urv. – H, Balc; $U_{2,5}T_3R_4$
17. Dianthus giganteus subsp. banaticus – Th, Eur; $U_2T_3R_3$
18. Dianthus spiculifolius Schur – H (Ch), Carp (End); $U_2T_{3,5}R_4$
19. Agrostemma githago L. – Th, Cosm; $U_3T_4R_0$
20. Gypsophila muralis L. - Th, Eua (Cont); $U_2T_3R_2$
21. Lychnis coronaria (L) Desr. – H, Med; $U_{2,5}T_4,R_3$
22. Lychnis flos-cuculi L. – H, Eua; $U_{3,5},T_{2,5},R_0$
23. Minuartia setacea subsp. banatica (Reichenb.) E.I.Narady – H, Alp-Carp-Balc;$U_{1,5}T_0R_4$
24. Moehringia muscosa L. – H, Euc (Mont); U_4,T_2,R_4
25. Saponaria officinalis L. – H, Eua(Med); $U_3T_3R_0$
26. Scleranthus perennis L. – H (Ch), Eur; $U_3T_0R_3$
27. Silene alba (Miller)E.H.L. Krause – Th(TH), Eua; $U_{3,5}T_2R_3$
28. Silene armeria L. – Th Euc; $U_{2,5}T_4R_3$
29. Silene vulgaris (Moench) Garcke – H(Ch), Eua; $U_{3,}T_{3,}R_4$
30. Stellaria holostea L. – H-Ch, Eua (Md); U_3,T_3,R_0
31. Stellaria graminea L. – H, Eua; $U_{2,5}T_2R_3$
32. Kohlrauschia (Petrorhagia) prolifera (L.)Kunth - Th, Atl-Med; $U_{1,5}T_4R_3$

Familia Polygonaceae

33. Rumex acetosella L. – H(G), Cosm; $U_2T_3R_2$
34. Rumex acetosa L. – H, Cosm; $U_3T_0R_0$
35. Bilderdykia (Polygonum) convolvulus (L.)Dumort. – Th, Circ; $U_{2,5}T_3R_3$

Familia Crassulaceae

36. Sedum acre L. – Ch, Eua; $U_1T_3R_0$

37. Sedum hispanicum L. – Th-TH, Med; $U_1T_{3,5}R_4$
38. Sedum sexangulare L. – Ch, Euc-Med; $U_2T_3R_0$
39. Sedum maximum (L.)Hoffm. – H, Eur; $U_2T_3R_4$
40. Sempervivum marmoreum (schlehanii) Griseb – Ch, Carp-Balc; $U_2T_4R_4$

Familia Rosaceae

41. Crataegus monogyna Jacq. – M, Eua; $U_{2,5}T_{3,5}R_3$
42. Filipendula vulgaris (F. hexapetala) Moench – H, Eua; $U_{2,5}T_3R_{4,5}$
43. Filipendula ulmaria (L.)Maxim. – H, Eua;$U_4T_2R_0$
44. Fragaria viridis Weston – H, Eur(Cont); $U_2T_4R_3$
45. Agrimonia eupatoria L. – H, Eua; $U_{2,5}T_3R_4$
46. Potentilla argentea L. – H, Eua; $U_2T_4R_2$
47. Potentilla arenaria (P. cinerea)Borkh. – H, eur (Cont); $U_2T_{3,5}R_{4,5}$
48. Potentilla inclinata Vill. – H, Eua(Cont);$U_3T_0R_4$
49. Potentilla recta L. – H, Eua(Cont); $U_{1,5}T_{3,5}R_4$
50. Potentilla reptans L. – H, Eua, $U_{3,5}T_4R_4$
51. Prunus spinosa L. – M, Eua(Med); $U_2T_3R_3$
52. Rosa canina L. – N, Eur; $U_2T_3R_3$
53. Rosa micrantha Sm. – N, Euc; $U_2T_{3,5}R_4$
54. Rosa pimpinellifolia L. – N, Eua; $U_2T_{3,5}R_4$
55. Sanguisorba minor Scop. – H, Eua; $U_2T_{3,5}R_{4,5}$

Fam. Fabaceae (Leguminosae)

56. Genista ovata Waldst. Et Kit. – Ch, Eur; $U_{2,5}T_3R_3$
57. Genista tinctoria L. – Ch, Eur; $U_{2,5}T_3R_2$
58. Genistella (Genista) sagittalis (L.) Gams - H, Atl-Med-Euc;U_3,T_3,R_3
59. Coronilla varia L. – H, Euc(Med); $U_2T_3R_4$
60. Chamaecytisus (Cytisus) hirsutus (L.) link – N, Euc; $U_2T_{3,5}R_4$
61. Dorycnium pentaphyllum Scop. – Ch-H, Euc(Med); $U_2T_5R_4$
62. Cytissus (Lembotropis) nigricans L. – N, Euc; $U_{2,5}T_{3,5}R_2$
63. Lathyrus latifolius L. – H, Med; $U_2T_{3,5}R_4$
64. Lotus corniculatus L. – H, Eua; $U_{2,5}T_0R_0$
65. Trifolium arvense L. – Th, Eua; $U_{1,5}T_3R_4$
66. Trifolium campestre Schreber – Th(TH(, Eur; $U_3T_3R_0$
67. Trifolium medium L. – H, Eua; $U_3T_3R_0$
68. Trifolium repens L. – H, Eua; $U_{3,5}T_0R_0$
69. Vicia angustifolia L. – Th, Eua; $U_0T_3R_0$
70. Vicia cracca L. – H, Eua; $U_3T_0R_3$
71. Vicia grandiflora Scop. – Th, pont-Cauc-Balc; $U_3T_3R_0$
72. Vicia tetrasperma (L.) Schreber – Th, Eua; $U_{3,5}T_3R_3$
73. Medicago lupulina L. – Th-H, Eua; $U_{2,5}T_3R_4$
74. Medicago minima (L.) L. – Th, Med; $U_{1,5}T_4R_4$
75. Melilotus officinalis Lam. – Th(TH), Eua; $U_{2,5}T_{3,5}R_0$
76. Melilotus albus Medicus – Th(TH), Eua; $U_{2,5}T_3R_0$
77. Robinia pseudoacacia L. – MM, Adv; $U_{2,5}T_4R_0$

Familia Lythraceae

78. Lythrum salicaria L. – H-HH, Circ; $U_4T_{2,5}R_0$

Familia Euphorbiaceae

79. Euphorbia cyparissias L. – H-G, Eua; U_2,T_3,R_4
80. Euphorbia epithymoides L. – H, Pan-Balc; $U_{2,5}T_4R_3$

Familia Aceraceae

81. Acer campestre L. – MM-M, Eur; $U_{2,5}T_3R_3$
82. Acer tataricum L. - MM-M,Eur (Cont); $U_{2,5}T_{3,5}R_4$

Familia Anacardiaceae

83. Cotinus coggygria Scop. – M, Pont-Med; $U_2T_{4,5}R_4$

Familia Geraniaceae

84. Geranium sanguineum L. – H, Eur; $U_2T_3R_4$

Familia Polygalaceae

85. Polygala amara L. – H (Ch), Euc(Mont);$U_0T_2R_{4,5}$

Familia Apiaceae (Umbeliferae)

86. Angelica archangelica L. – TH-H, Eua(Bor); $U_{4,5}T_{2,5}R_0$
87. Anthriscus sylvestris (L.) Hoffm. – H, Eua(Med); $U_3T_3R_4$
88. Athamanta turbith subsp. hungarica (Borbas) Tutin – H, Carp(End); $U_2T_{3,5}R_{4,5}$

89. Daucus carota subsp. carota L. – Th-H, Eua (Med); $U_2T_3R_0$
90. Eryngium campestre L. – H, pont-Med; $U_1T_5R_4$
91. Ferulago sylvatica (Besser) Reichenb. – H, Pont-Med; $U_2T_{3,5}R_3$
92. Peucedanum longifolium Waldst. Et Kit – H, Dac-Balc; $U_{1,5}T_4R_{4,5}$
93. Peucedanum oreoselinum (L.) Moench – H, Eur(Cont); $U_{2,5}T_3R_0$
94. Pimpinella major (L.) Hudson – H, Eur; $U_3T_4R_4$
95. Orlaya grandiflora (L.) Hoffm. – Th, Euc-Med; $U_2T_{3,5}R_4$
96. Torilis arvensis (Hudson) Link – Th, Euc-Med; $U_{2,5}T_{3,5}R_4$
97. Seseli pallasii (varium) Besser - TH-H,Balc-Pan; $U_2T_{3,5}R_4$

Familia Hypericaceae

98. Hypericum perforatum L. – H, Eua; $U_3T_3R_0$

Fam. Violaceae

99. Viola arvensis Murray – Th, Cosm; $U_3T_3R_0$
100. Viola reichenbachiana Jordan ex Boreau – H, Eua; $U_3T_{2,5}R_3$

Familia Brassicaceae (Cruciferae)

101. Aurinia petraea (Alyssum petraeum Ard.) – H, Carp-Balc; $U_2T_{2,5}R_{4,5}$
102. Aurinia saxatilis (Alyssum saxatile)L. – Ch, Eur (Cont); $U_1,T_4,R_{4,5}$
103. Arabis turrita L. – TH, Euc (Med); $U_2T_4R_4$
104. Cardaminopsis arenosa(L.)Hayek; Th-(TH-H),Euc; $U_{2,5}T_3R_4$
105. Draba muralis L. – Th, Eur(Med); $U_{2,5}T_{3,5}R_{4,5}$
106. Erysimum comatum Pančić – TH(H), carp-Balc; $U_2T_4R_3$
107. Erysimum odoratum Ehrh. – TH, Pont; $U_{2,5}T_3R_4$
108. Rorippa pyrenaica (Lam.)Rreichenb. – H, Eur; $U_{2,5}T_3R_3$

Familia Primulaceae

109. Lysimachia vulgaris L. – H-Hh, Eua; $U_5T_2R_0$

Familia Asclepiadaceae

110. Vincetoxicum hirundinaria (Cynanchum vincetoxicum) Medikus – H, Eur(Med); $U_2T_4R_4$

Familia Oleaceae

111. Syringa vulgaris L. – M, Carp-Balc-Anat; $U_{1,5}T_{4,5}R_{4,5}$
112. Ligustrum vulgare L. – M, Eua(Med); $U_{2,5}T_3R_3$
113. Fraxinus ornus L. – MM, Med; $U_{1,5}T_{3,5}R_5$

Familia Convolvulaceae

114. Convolvulus arvensis L. – G(H), Cosm; $U_{2,5}T_{3,5}R_{3,5}$

Familia Boraginaceae

115. Lithospermum purpurocaeruleum L. – H-G, Euc-Med; $U_{2,5}T_4R_{4,5}$
116. Echium vulgare L. – TH, Eua; $U_2T_3R_4$

Familia Lamiaceae (Labiatae)

117. Acinos alpinus (Calamintha alpina) (L.) Moench – H, Euc-Alp; $U_3T_0R_5$
118. Acinos arvensis (Calamintha acinos)(Lam.) Dandy – Th-TH, Euc (Med); $U_{1,5}T_{3,5}R_4$
119. Prunella vulgaris L. – H, Cosm; $U_3T_3R_0$
120. Salvia nemorosa L. – H, Euc; $U_{2,5}T_4R_3$
121. Salvia pratensis L. – H, Eur(Med); $U_{2,5}T_3R_5$
122. Salvia verticillata L. – H, Euc(Med); $U_2T_4R_0$
123. Origanum vulgare L. – H, Eua; $U_2T_3R_3$
124. Teucrium chamaedrys L. – Ch, Med-Euc; $U_2T_4R_4$
125. Teucrium montanum L. – Ch, Med-Euc; $U_1T_4R_5$
126. Thymus glabrescens Willd. – Ch, Pont-Med; $U_2T_4R_0$
127. Thymus pannonicus (marschallianus) All. – Ch, Pont-Pan; $U_{1,5}T_{3,5}R_4$
128. Stachys recta L. – H, Pont-Med; $U_2T_5R_5$

Familia Plantaginaceae

129. Plantago lanceolata L. – H, Eua; $U_3T_0R_0$
130. Plantago media L. – H, Eua; $U_{2,5}T_0R_{4,5}$

Familia Scrophulariaceae

131. Digitalis lanata Ehrh. – TH-H, Balc-Pan; $U_{1,5}T_4R_{4,5}$
132. Linaria genistifolia (L.) miller – H, Eua(Cont); $U_1T_{3,5}R_5$
133. Rhinanthus rumelicus Velen. – Th, Pont-Pan-Balc; $U_3T_4R_0$
134. Verbascum banaticum Rochel – TH, Pont-Balc; $U_2T_4R_4$
135. Verbascum phlomoides L. – TH, Eur; $U_{2,5}T_{3,5}R_4$
136. Veronica spicata subsp. barrelieri (crassifolia)Murb. – H, Carp-Balc; $U_1T_{4,5}R_4$
137. Veronica austriaca subsp. teucrium (crinita) – H, Pont-Med-Euc; $U_2T_4R_4$

Familia Campanulaceae

138. Campanula grossekii Heuffel – H, Balc; $U_2T_4R_3$
139. Campanula persicifolia L. – H, Eua; $U_3T_3R_0$
140. Campanula rapunculoides L. – H, Eua; $U_3T_2R_0$
141. Campanula rotundifolia L. – H, Circ; $U_2T_0R_3$
142. Campanula sibirica L. – H, Eua(Cont); $U_{2,5}T_4R_4$
143. Campanula sparsa subsp. sphaerothrix (Griseb) Hayek – Th, Balc; $U_2T_4R_3$

Familia Rubiaceae

144. Galium album Miller – H, Eur; $U_{2,5,}T_{2,5}R_3$
145. Galium aparine L. – Th, Circ; $U_3T_3R_3$
146. Galium divaricatum Pourret ex Lam. – Th, Med; $U_2T_4R_3$
147. Galium flavescens Borbas – H, Cerp-Balc; $U_2T_4R_5$
148. Galium mollugo L. – H, Eua; $U_3T_{2,5}R_3$
149. Cruciata laevipes Opiz. - H, Eua; $U_{2,5}T_3R_3$

Familia Caprifoliaceae

150. Sambucus ebulus L. – H, Eua; $U_3T_3R_3$

Familia Dipsacaceae

151. Knautia arvensis (L.) Coulter – H,Eur; $U_{2,5}T_3R_0$
152. Scabiosa columbaria L. – H, Eur(Med); $U_{2,5}T_3R_{4,5}$
153. Scabiosa ochroleuca L. – H, Eua(Cont); $U_2T_4R_4$

Familia Asteraceae (Compositae)

154. Achillea collina J. Becker – H, Eur(Cont); $U_2T_3R_3$
155. Achillea crithmifolia Waldst. Et Kit. – H, Balc-Pan; $U_{2,5}T_4R_0$
156. Achillea millefolium L. – H, Eua; $U_3T_0R_0$
157. Eupatorium cannabinum L. – H, Eua; $U_4T_3R_3$
158. Hieracium aurantiacum L. – H, Eua(Arct-Alp); $U_{3,5}T_2R_4$
159. Hieracium pilosella L. – H, Eua; $U_2T_0R_2$
160. Hieracium umbellatum L. – H, Cp; $U_{2,5}T_3R_0$
161. Lactuca serriola L. – TH, Eua, $U_{1,5}T_{3,5}R_0$
162. Lactuca viminea (L.) J. et C. Presl. – TH, Eua(Cont); $U_2T_4R_4$
163. Ambrosia artemisiifolia L. – Th, Adv(Am de N); $U_2T_0R_0$
164. Anthemis tinctoria L. – H, Eua(Cont); $U_{1,5}T_3R_3$
165. Centaurea triniifolia Heuffel – H, Carp-Balc; $U_{1,5}T_4R_{4,5}$
166. Cichorium intybus L. – H, Eua; $U_3T_0R_3$
167. Cirsium vulgare (Savi) Ten. – TH, Eua; $U_3T_3R_0$
168. Chondrilla juncea L. – TH-H, Eua(Cont); $U_{1,5}T_{3,5}R_4$
169. Echinops bannaticus Rochel – H, Balc-Cauc; $U_{1,5}T_4R_4$
170. Erigeron annuus (L.) Pers. – Th-TH-H, Adv(Am de N); $U_4T_0R_4$
171. Hypochaeris maculata L. – H, Eua; $U_0T_0R_3$
172. Leucanthemum vulgare Lam. – H, Eua; $U_3T_0R_0$
173. Leontodon crispus Vill. – H, Eua-Cont; $U_2T_4R_4$
174. Picris hieracioides L. – TH-H, Eua; $U_{1,5}T_3R_4$
175. Sonchus asper (L.) Hill. – Th-TH, Cosm; $U_3T_0R_0$
176. Sonchus oleraceus L. – Th, Cosm; $U_3T_0R_0$
177. Tragopogon pratensis L. – TH-H, Eua; $U_3T_2R_3$
178. Tragopogon pratensis subsp. orientalis (L.) Čelak - TH-H, Eua; $U_3T_3R_4$

Familia Liliaceae

179. Muscari neglectum - G, Med-Euc; $U_{1,5}T_4R_5$

Familia Alliaceae

180. Allium flavum L. – G, Euc-Med; $U_{1,5}T_3R_{4,5}$

Familia Iridaceae

181. Iris reichenbachii var. lutea Heuffel – G, Balc; $U_{1,5}T_{4,5}R_4$

Familia Juncaceae

182. Luzula campestris (L.) DC, - H, Cosm; $U_3T_0R_3$
183. Luzula sylvatica (Hudson) Gaudin – H, Euc; $U_{3,5}T_{2,5}R_2$

Familia Cyperaceae

184. Carex vulpina L. – H, Eua; $U_4T_3R_4$
185. Scirpus sylvaticus L. – HH-G, Circ; $U_{4,5}T_3R_0$

Familia Poaceae (Gramineae)

186. Agrostis capillaris L. – H, Eua; $U_{3,5}T_3R_3$
187. Anthoxanthum odoratum L. – H, Eua; $U_0T_0R_0$
188. Brachypodium pinnatum (L.) Beauv. – H, Eua(Med); $U_{2,5}T_4R_4$

189. Bromus ramosus Hudson – H, Euc; $U_3T_3R_3$
190. Bromus riparius Rehmann – H, Pont-Med; $U_2T_{2,5}R_{4,5}$
191. Briza media L. – H, Eua; $U_0T_3R_0$
192. Calamagrostis epigeios (l.) Roth – G, Eua; $U_2T_3R_0$
193. Chrysopogon gryllus (L) Trin. – H, Med; $U_{1,5}T_4R_4$
194. Cynodon dactylon (L.) Pers. – G, Cosm; $U_2T_{3,5}R_0$
195. Dactylis glomerata L. – H, Eua; $U_3T_0R_4$
196. Deschampsia flexuosa (L.) Trin. – H, Circ; $U_2T_0R_1$
197. Elymus repens (L.) Gould. – G, Circ; $U_0T_0R_0$
198. Festuca panciciana (dalmatica subsp. panciciana) (Hackel) K. Richter – H, Balc; $U_{1,5}T_{4,5}R_4$
199. Festuca heterophylla Lam. – H, Euc(Med); $U_{2,5}T_3R_3$
200. Festuca pratensis Hudson – H, Eua; $U_{3,5}T_2R_0$
201. Festuca rupicola Heffel – H, Eua(Cont); $U_{1,5}T_4R_4$
202. Festuca valesiaca Schleicher ex Guadin – H, Eua(Cont); $U_1T_5R_4$
203. Holcus mollis L. – H, Eur; $U_{3,5}T_{3,5}R_0$
204. Melica ciliata L. – H, Euc-Med; $U_{1,5}T_4R_4$
205. Melica uniflora Retz. – H(G), Euc-Med; $U_{2,5}T_3R_4$
206. Phleum montanum C. Koch – H, Carp-Balc-Cauc-Anat; $U_{1,5}T_{4,5}R_4$
207. Piptatherum (Oryzopsis) virescens (Trin.) Boiss. – H, Med; $U_2T_{3,5}R_{4,5}$
208. Poa nemoralis L. – H, Circ; $U_3T_3R_0$
209. Poa pratensis L. – H, Cosm; $U_3T_0R_0$
210. Poa trivialis L. – H, Eua; $U_4T_0R_0$
211. Setaria viridis (L.) Beauv. – Th, Cosm; $U_2T_{3,5}R_0$

From a phyto-geographical point of view, flora is made up mainly of Euro-Asian elements – 78 species (37%) constituting in fact the general fund of the flora in the temperate European area. To this we can add a rather high number of species – Central European elements (28 species, i.e. 13%) and European elements (27 species, i.e. 13%). (Figure 1)

Cosmopolitan floral elements (15 species) and adventive floral elements (3 species) also make up flora, with a total of 18 species (9%), which shows a trend to turning into rock flora of the vegetation in the vegetal cover under study. Such species are as follows: *Agrostemma githago*, *Convolvulus arvensis*, *Viola arvensis*, *Rumex acetosa*, *Polygonum convolvulus*, *Ambrosia artemisiifloria*, *Erigeron annuus*, *Sonchus asper*, *Cynodon dactylon*, *Dactylis glomerata, Elymus repens*, *Setaria viridis*, etc.

From the point of view of their adaptations to the unfavourable weather conditions during winter, flora is represented by bio-forms of which hemi-cryptophytes represent more than half (122 species, i.e. 58%). These species make up all the rock associations, be they calcium rocks or crystal shale. They are followed by annual terophytes (35 species, i.e. 17%) and bi-annual terophytes (16 species, i.e. 8%). The large number of terophytes points out once again the high percentage of flora turned into cultivated flora in the area under study.

Among moisture spectrum, we note the preponderance of xero-mesophylous elements (104 de species, i.e. 49%) making up associations specific to the Banat's rock areas. Among the woody species making up arid rock associations we can mention the following ones: *Quercus cerris*, *Fraxinus ornus*, *Syringa vulgaris*, *Cotinus coggygria*, etc. Among grassy species, we can mention the following ones: *Dianthus spiculifolius*, *Minuartia setacea* subsp. *banatica*, *Sedum hispanicum*, *Sempervivum marmoreum*, *Alyssum petraeum*, *Orlaya grandiflora*, *Teucrium montanum*, *Allium flavum*, *Festuca valesiaca*, *Festuca rupicola*, *Poa nemoralis*, etc.

The temperature spectrum shows the dominance of meso-thermal species (105 species, i.e. 50%), followed by moderate thermal species (51 species, i.e. 24%).

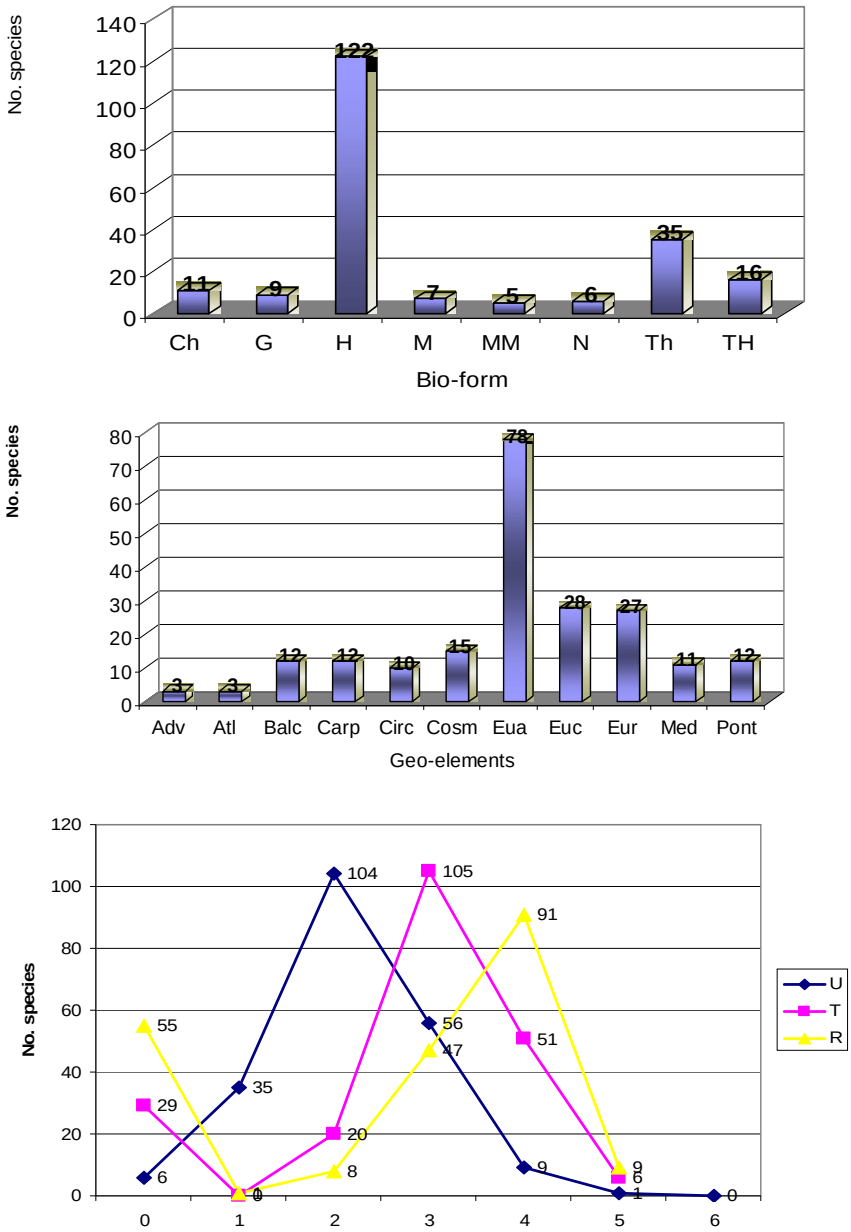

Figure 1. Bio-form, geo-elements, temperature, moisture, and soil reaction spectra

As for soil reaction, poorly acid neutrophilous species are well represented by 91 species (43%), followed by amphitolerant species (55 species, i.e. 26%), and by acid-neutrophilous species (46 species, i.e. 22%).

CONCLUSIONS

Analysing phyto-geographical elements, we can see note the general Euro-Asian flora fund (34%) characteristic of a temperate European climate, to which we can add in equal percentage, European and Central-European elements (13%). The specific feature of flora is the presence of sub-Mediterranean elements, mainly meso-xerophilous making up rock specific associations.

Analysing bio-forms, we can see a clear dominance of the spectrum by hemi-cryptophytes – over half of the total number of species (58%), which shows the Central-European character of the flora. The large number of annual and bi-annual terophytes (51 species, i.e. 25%) shows the high degree of flora turning into cultivated flora.

In the moisture spectrum we can note the preponderance of xero-mesophilous elements (104 species, i.e. 49%) making up the associations specific to the Banat's rock areas.

The temperature spectrum shows the fact that the flora of the studied area is part of the sub-Mediterranean influence area, a fact also confirmed by the dominant share of meso-thermal elements (105 species, i.e. 50%)and by a large number of moderate thermophilous elements (51 species, i.e. 24%).

As for soil reaction, poorly acid neutrophilous species are well represented by 91 species (43%), followed by amphitolerant species (55 species, i.e. 26%), and by acid-neutrophilous species (46 species, i.e. 22%).

From the point of view of biodiversity, the area is a very rich one, as there are, on a total area of 220 ha, 211 species belonging to very varied phyto-geographical elements and bio forms.

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