



PRELIMINARY DATA FOR THE SHARR MOUNTAIN FLORA - ACEDONIA

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ABSTRACT

In this paper are presented partial data of a two year work (March 2013 - November 2014) on "**DATA ON FLORA, HABITAT AND ITS VALUES IN THE MASSIF OF SHARR MOUNTAIN - MACEDONIA**" a phase which coincides with different phases of vegetation. This study has been done for the first time especially within the Macedonian Flora, a study which completes the research of the Sharr Mountain Flora. The study is concentrated in 9 stations in the Sharr Mountains. The accumulation of the scientific material was conducted from early spring until late autumn, preparing herbarium, accompanied by data for site-collection, date, biotope etc. During this study a rich material has been collected, of about 300 exemplars. From the previous floristic analysis so far, it results that the Flora of the Sharr Mountain is rich with different types. The selected material consists of 72 families, 221 genders and around 552 types (see species table nr. 2).

Indexing terms/Keywords

Sharr Mountain Flora; conservation biology

Academic Discipline And Sub-Disciplines

Biology;

TYPE (METHOD/APPROACH)

It is accumulated and is known in literature as "ALBANIAN FLORA" (vol. I-IV), (1988-2000), Tirana, "Flora of the Republic of Macedonia" vol.1-6), as well as all other material and available needed literature. It has been compiled a previous list of the high Flora and its spreading. There are selected data with general character related to geomorphology, types of soils, climate and main plant formations.

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INTRODUCTION

Sharr Mountain is one of the most important Balkan and European centers of the most qualitative endemism including relict, endemic and endemic relicts' types. In the Sharr Mountain there are around 200 taconic, endemic and sub-endemic plants, (species, sub-species and varieties), steno-endemic orofits (mountain species). These species are of tertiary age and rarely glacial. Such species require special care: *Silene schmuckeri*, *Dianthus scardicus*, *Bornmullera dieckii*, *Draba korabensis*, *Sedum flexuosum*, *Potentilla doerfleri*, *Crocus scardicus* and *Oxytropis korabensis*.

Tertiary orofits (mountain species of tertiary age). They are most of the time steno-endemic and sub-endemic species: *Pinus peuce*, *Pinus heldreichii*, *Silene Waldsteinii*, *Silene lerchenfeldiana*, *Silene asterias*, *Ptilotrichum rupestre*, *Shieverackia doerfleri*, *Iberis sempervirens*, *Hesperis Dinarica*, *Saxifraga Androsaceae*, *Saxifraga glabella*, *Potentilla montenegrina*, *Anthyllus aurea*, *Acer heldreichii*, *Rhamnus pumilla*, *Viola Grisebachiana*, *Heacleum orphanidis*, *Soldanella dimonieii*, *Veronica satureioides*, *Tozzia alpa*, *Ramonda serbica* and *Ramonda nathaliae*, *Nerthecium scardicum*, *Lilium albanicum*, *Gymnadenia frywaldsiana*, *Rhododendron ferrugineum* and *Linaria alpina*.

Glacial species with arctic Alps spreading (forms from the ice age). They are very rare in the Balkan Peninsula: *Selaginella Selaginoides*, *Diphysium alpinum*, *Cryptogramma crista*, *Salix herbaceae*, *Salix reticulata*, *Rumex nivalis*, *Silene rupestris*, *Rhodiola rosea*, *Saxifraga bryoides*, *Saxifraga androsaceae*, *Geum reptans*, *Epilobium anagallidifolium*, *Loiseleuria procumbens*, *Veronica alpina*, *Veronica aphylla*, *Pedicularis oederi*, *Erigeron uniflorus*, *Saussurea alpina*, *Carex foetida*.

The Sharr Mountain stretches in the northeast-west-southwest, and is situated in the north-west part of the Republic of Macedonia. It starts from Lepenc, from the Luboten peak (2147 m.), precisely with the upper flow of the Radika River and the western part of the Mavrovo Lake. From the southeast side, the Sharr in steeping form borders with the Pollog valley, while from the northeast, north, northwest and southwest part it borders with the Kacanik Gorge, Sirinik Zone, Prizren Bistrica Valley, Gorska and Opolska, Kalabak and Sherupa Zone.

Sharr Mountain is characterized by a horizontal wide projection with a length of 76 km, and a surface of 1600 m². The average height of the slope is 2200 m.

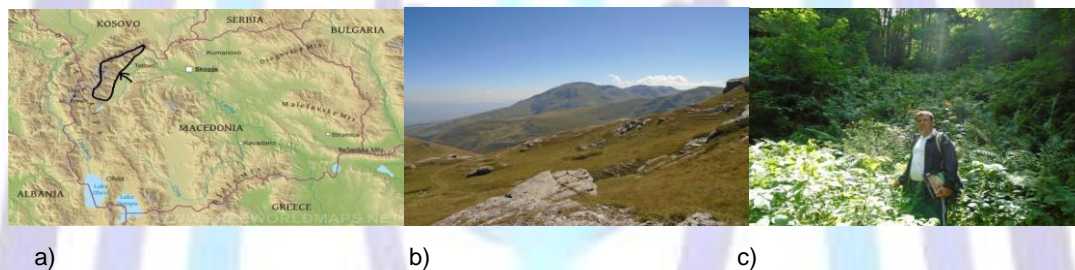


Fig 1: a) Location of the Sharr Mountain, b) Sharr Mountain slopes (original), c) Accumulation of plants for collection (original).

GEOLOGICAL ASPECTS OF THE RESEARCHED REGION

From the geological aspect (Менковић, 1978), in the creation of the mountains of the Sharr region, are the schist rocks, but there is also limestone and magmatic rocks.

The magmatic rocks in the Sharr Mountain contain chrome, while in Bistra the mine of iron. From non-metals there is a big surface of gypsum and qualitative marble surfaces near the town of Gostivar.

From the geological content aspect, mainly dominate the Paleozoic plates with a big quantity of lime and dolomite. The Bistra Mountain from the geological aspect consists of old Paleozoic rocks, with glacial relief as well, especially the circles.

Climate Conditions According to the geographic position (Rodić, 1987), the Republic of Macedonia is located in the Southern Europe with a meridian 41 and 42 passing through it in the northern geographic width, which means that it is closer to the Ecuador than Northern Pole. The geographic width affects directly in the intensity and extension of solar radiation and this is lowered from south to north. The solar radiation extension and intensity is affected by the sea nearness as well.

From this point of view, the territory of the Republic of Macedonia even though it doesn't have direct cruise in the sea, is under the influence of side seas, because from the Aegean Sea it is far south (airline) about 60 km and from the Adriatic Sea west around 80 km. Generally it has Mediterranean mild climate. However, the influence of the Mediterranean climate does not enter in its depth, due to the high mountains in the west and south.

From the West there can be seen the influence of the Atlantic Ocean, although it is located very far. From there western winds blow bringing quantity in air humidity and are blowing during the whole year, and during the spring and autumn months, they bring rain. In the researched area, according to Lazarevski (Lazarevski, 2002) there are three main climate types:



Mountain climate – it is characteristic for mountains above 1000 m altitude. It has long and cold winters, snow falling and short and fresh summers. Here, the spring is colder than autumn. This climate is more present than the others, because the majority of the researched part of the region has high mountain terrains.

Plant Communities

Plant Communities are groups of plant species which under specific ecological, historical and bio-geographical conditions are eternal as far as their floristic form and content is considered. More or less they determine the content of zo-cenosis, respectively of the whole ecosystem; and represent the foundation for naming the places and ecosystems. From here it results that the knowledge for the vegetation, respectively the combination of the plant communities in one landscape has big meaning in nature's protection, as well as for the ecology in general, too.

The vegetation in the Sharr Mountain is various with a big number of plant communities (phytocenosis). Until now there has not been conducted a complete control of the plant communities found in the Sharr Mountain. For this, we have mentioned here only the information which is available for the vegetation of the Sharr Mountain. Having in mind the big gradient of the height from Pollog to the highest peaks, in the Sharr Mountain are found almost all vegetation generations in the Republic of Macedonia. Below is the forest generation, above are the pastures and the bushes and above all are the rocks and stones. For a better view, the plant communities are presented in zones (according to the generations) from down-up.

Forest Vegetation Zones

The forest communities of the Sharr Mountain are spread in several height vegetation zones. In the first two zones dominate the plant communities with different types of oak and they are spread to the height of 10m. Above it, there are developed two mountain beech zones and above them the sub-alp mountain forests presented with several communities (Mellovski et. Al 2010) .

The soft oak forest zones (from the community of the soft oak)

In the lower part of the valleys of Western Macedonia and Pollog, are also thermophiles and xerophile oak forests. They present the foundation of the hollows and the lower part of the mountain beam all around (up to 900m height, while in the south exposures even higher).

Expedition realized :

1. May, Juny, July, August. 2013, 2014- Upper Pallçisht
2. May, Juny, July, August. 2013, 2014- Lisec
3. May, Juny, July, August. 2013, 2014- Sellca's baths
4. May, Juny, July, August. 2013, 2014- Popova Shapka
5. May, Juny, July, August. 2013, 2014- Leshnica
6. August. 2013,2014- Tito vrv
7. September. 2013,2014- Rogaçeva
- 8 September. 2013,2014- Luboten
9. September, Oktober. 2013,2014- Veshalla



Tabela 1. The sites surveyed

Nr.	Stations (localities) of the mapped	Year	Geographical breadth	Geographical length	Height above sea level	Description of habitat
1.	Upper Pallçisht	2013, 2014	N 42 ⁰ 10' 58.70"	E 21 ⁰ 08' 17.61"	1100 m.	Herbaceous plants, shrubs, trees.
2.	Popova Shapka	2013, 2014	N 42 ⁰ 00' 56.73"	E 20 ⁰ 54' 37.02"	1100-1546 m.	Herbaceous plants, shrubs, trees.
3.	Sellca's baths	2013, 2014	%	%	900-1000 m.	Herbaceous plants, shrubs, trees.
4.	Popova Shapka	2013, 2014	N 42 ⁰ 00' 56.73"	E 20 ⁰ 54' 37.02"	1460 m.	Herbaceous plants, shrubs, trees.
5.	Leshnica	2013, 2014	%	%	1400 m.	Subalps area of pastures, bushes. Leshnica Woody plants.
6.	Titov vrv	2013, 2014	%	%	2747 m.	Alpine areas and subalps.
7.	Rogaçeva	2013, 2014	%	%	%	Herbaceous plants, shrubs, trees
8.	Luboten	2013, 2014	N 42 ⁰ 10' 58.70"	E 21 ⁰ 08' 17.61"	1630- 1945 m.	Alpine areas, stony
9.	Brodec-Veshalla	2013, 2014	N 42 ⁰ 03' 24.30"	E 20 ⁰ 30' 08.32"	950- 1025 m.	Outfall, spontaneous and cultivated vegetation
10.	Sharr Mountain	2013, 2014	%	%	%	%

STUDY RESULTS

Tax Hierarchy Handle

Below are summarized the taxonomic order followed in this study, which is based on the nomenclature of Hill et al. (2006); for each species is given in brackets locality of proliferation, Tabela 1. The sites surveyed and results of study based on [3], [4] are as follow:

1. LYCOPODIACEA

1. *Huperzia* Bernh. 1. *Huperzia* selago (4).

2. SELAGINELLACEAE

2. *Selaginella* Beauv. 2. *Selaginella* selaginoides (4).

3. EQUISETACEAE

3. *Equisetum* L. 3. *Equisetum* arvense (3).

4. OPHYOGLOSSACEAE

4. *Botrychium* L. Swartz 4. *Botrychium* lunaria (1,2,3,4,5,8).

5. ASPLENIACEAE

5. *Asplenium* L. 5. *Asplenium* trichomanes (3); 6. *Asplenium* viride (3); 7. *Asplenium* adiantum-nigrum (3); 8. *Asplenium* septentrionale (10); 9. *Asplenium* ruta-muraria (10); 10. *Asplenium* fissum (10).

6. *Ceterach* Dc. 11. *Ceterach* officinarum (10).

6. ATHYRIACEAE

7. *Athyrium* Roth 12. *Athyrium* filix-femina, (10); 8. *Cystopteris* Bernh. 13. *Cystopteris* fragilis (10).

7. ASPIDIACEAE



9. Polystichum Roth. 14. *Polystichum lonchitis* (3,4,6,7); 15. *Polystichum acuilinum* (3,4,6,7); 16. *Polystichum Illyricum* (3,4,6,7); **10. Dryopteris** Adanson 17. *Dryopteris filix-mas* (1,2,3,4,5,6,7,8); 18. *Dryopteris villari* (10); 19. *Dryopteris dilatata* (10); **11. Gymnocarpium** Newman 20. *Gymnocarpium dryopteris* (10).

8. BLECHNACEAE

12. Blechnum L. 21. *Blechnum spicant* (10).

9. PINACEAE

13. Abies Miller 22. *Abies Borisii regis* (3,4); **14. Picea** 23. *Picea abies* A. Dietr. (3,4); **15. Pinus** L. 24. *Pinus nigra* (3,4); 25. *Pinus sylvestris* (10); 26. *Pinus mugo* (10); 27. *Pinus heldreichii* (10); 28. *Pinus peuce* (10).

10. CUPRESACEAE

16. Juniperus .L. 29. *Juniperus communis* (1,2,3,4,5,6,7,8); 30. *Juniperus oxicedrus* (1,2,3,4,5,6,7,8).

11. TAXACEAE

17. Taxus L. 31. *T. baccata* (5).

12. RANUNCULACEAE

18. Trollius L. 32. *T. europaeus* (3,4,6,7,8); **19. Isopyrum** L. 33. *I. thalictroides* (1,3,5,6); **20. Actaea** L. 34. *Actaea spicata* (2,3,7); **21. Caltha** L. 35. *Caltha palustris* (2,3,5); **22. Aconitum** L. 36. *Aconitum lamarckii* (4,6,7); 37. *Aconitum divergens* (4); **23. Anemone** L. 38. *Anemone nemorosa* (1,2,3,5,7,9); 39. *Anemone ranunculoides* (1,2,3,5,7,9); 40. *Anemone narcissiflora* (1,4,6,9); **24. Pulsatilla** Miller. 41. *Pulsatilla vernalis* (4); **25. Clematis** L. 42. *Clematis vitalba* (1,2,3,7,9); **26. Ranunculus** L. 43. *Ranunculus nemorosus* (3,5,7,8,9); 44. *Ranunculus repens* (10); 45. *Ranunculus lanuginosus* (1,2,3,4,5,7,8,9); 46. *Ranunculus acris* (10); 47. *Ranunculus serbicus* (10); 48. *Ranunculus montanus* (10); 49. *Ranunculus demissus* (1,2,4,6,7,8,9); 50. *Ranunculus bulbosus* (10); 51. *Ranunculus degeni* (9); 52. *Ranunculus psilostachys* (10); 53. *Ranunculus illyricus* (10); 54. *Ranunculus cretanus* (1,2,3,4,5,6,7,8); 55. *Ranunculus platanifolius* (2,5); 56. *Ranunculus montenegrinus* (9); 57. *Ranunculus ophyoglossifolius* (2,4,5); **27. Thalictrum** L. 58. *Thalictrum aquilegifolium* (10); 59. *Thalictrum alpinum* (4,6); 60. *Thalictrum minus* (1).

13. PAPAVERACEAE

28. Papaver L. 61. *Papaver rhoeas* (1); **29. Chelidonium** L. 62. *Chelidonium majus* (1).

14. FUMARIACEAE

30. Corydalis Vent 63. *Corydalis solida* (10); **31. Fumaria** L. 64. *Fumaria rostellata* (10); 65. *Fumaria officinalis* (10).

15. ULMACEAE

32. Ulmus L. 66. *Ulmus carpiniifolia* (10); 67. *Ulmus minor* (10); 68. *Ulmus glabra* (5).

16. MORACEAE

33. Morus L. 69. *Morus alba* (1,3,7,9)

17. CANNABACEAE

34. Humulus L. 70. *Humulus lupulus* (1,3,7,9)

18. URTICACEAE

35. Urtica L. 71. *Urtica dioica* (10); 72. *Urtica parietaria* (10).

19. FAGACEAE

36. Fagus L. 73. *Fagus sylvatica* (2,4,5,8,9); **37. Castanea** Miller 74. *Castanea sativa* (1,3,7,9); **38. Quercus** L. 75. *Quercus austriaca* (1,3,7,9); 76. *Quercus petraea* (1,3,7,9); 77. *Quercus virgilliana* (1,3,7,9).

20. BETULLACEAE

39. Betula L. 78. *Betula pendula* (1,3,7,9); **40. Alnus** Miller 79. *Alnus glutinosa* (1,3,7,9); **41. Carpinus** L. 80. *Carpinus orientalis* (1,3,7,9); **42. Coryllus** L. 81. *Coryllus avellana* (1,2,3,7,9); 82. *Coryllus columna* (1,2,3,7,9)

21. JUGLANDACEAE

43. Juglans L. 83. *Juglans regia* (7).

22. CARYOPHYLLACEAE

44. Arenaria L. 84. *Arenaria biflora* (10); 85. *Arenaria leptoclados* (10); 86. *Arenaria serpyllifolia* (1,2,3,4,5,9); 87. *Arenaria rotundifolia* (10); **45. Moehringia** L. 88. *Moehringia trinervia* (7). 89. *Mehringia recurve* (10); **46. Stellaria** L. 90. *Stellaria nemorum* (9); 91. *Stellaria alsine* (4,5,8); 92. *Stellaria graminea* (10); **47. Cerastium** L. 93. *Cerastium glomeratum* (2,4,5,6,8); 94. *Cerastium graci* (10); 95. *C. mantica* (10); 96. *Cerastium lanatum* (2,4,5,6,8); 97. *Cerastium brachypetalum* (1). **48. Sagina** L. 98. *Sagina subulata* (10); 99. *Sagina procumbens* (10); **49. Scleranthus** 100. *Scleranthus perennis*



(9,10); 101. *Scleranthus annuus* (10); **50. *Paronychia*** Miller. 102. *Paronychia capela* (10); 103. *Paronychia chionaea* (10); 104. *Paronychia macedonica* (10); 105. *Paronychia albanica* (9,10); **51. *Herniaria*** L. 106. *Herniaria glabra* (10); 107. *Herniaria incana* (10); **52. *Spergula*** Presl. 108. *Spergula rubra* (10); **53. *Lychnis*** L. 109. *Lychnis coronaria* (10); 110. *Lychnis viscaria* (10); **54. *Silene*** L. 111. *Silene italic* (10); 112. *Silene vulgaris* 113. *Silene paradoxa* (7); 114. *Silene viridiflora* (10); 115. *Silene bupleroides* (7); 116. *Silene sendtneri* (10); 117. *Silene multicaulis* (6,8); 118. *Silene waldsteini* (6,10); 119. *Silene ciliata* (10); 120. *Silene acaulis* (6,8); 121. *Silene pusilla* (albanica) (10); 122. *Silene asterias* (8,9); 123. *Silene dioica* (5); 124. *Silene heuffelii* (5); 125. *Silene trinervia* (4); **55. *Drypis*** L. 126. *Drypis spinosa* (10); **56. *Gypsophylla*** L. 127. *Gypsophylla muralis* (1); **57. *Saponaria*** L. 128. *Saponaria officinalis* (10); **58. *Petrorhagia*** (Ser.) Link. 129. *Petrorhagia prolifera* (4,8); **59. *Dianthus*** L. 130. *Dianthus cruentus* (4,8); 131. *Dianthus minutiflorus* (2,6,8); 132. *Dianthus deltoides* (8); 133. *Dianthus degeni* (2,4,5,6,8); 134. *Dianthus gracilis* (7); 135. *Dianthus haematocalix* (7); 136. *Dianthus viscidus* (10). 137. *Dianthus pinofolius* (7); 138. *Dianthus cruentus* (10); 139. *Dianthus hyalolepis* (4,5).

23. CHENOPODIACEAE

60. *Chenopodium* L. 140. *Chenopodium botrys* (10); 141. *Chenopodium bonus-henricus* (10); **61. *Kochia*** Roth. 142. *Kochia scoparia* (10).

24. POLYGONACEAE

62. *Polygonum* L. 143. *Polygonum arenastrum* (10). 144. *Polygonum persicaria* (10). 145. *Polygonum bistorta* (10). 146. *Polygonum viviparum* 147. *Polygonum alpinum* (10); **63. *Oxiria*** Hill. 148. *Oxiria digyna* (10); **64. *Rumex*** L. 149. *Rumex acetosella* L. (10); 150. *Rumex scutatus* (10); 151. *Rumex tuberosus* (1); 152. *Rumex nivalis* (10); 153. *Rumex acetosa* (10); 154. *Rumex patientia* (10); 155. *Rumex alpinus* (10); 156. *Rumex obtusifolius* (10).

25. PLUMBAGINACEA

65. *Armeria* Willd. 157. *Armeria canescens* (4,6); 158. *Armeria rumelica* (7).

26. HYPERICACEAE

66. *Hypericum* L. 159. *Hypericum richeri* (10); 160. *Hypericum barbatum* (10). 161. *Hypericum rumeliacum* (10); 162. *Hypericum maculatum* (4); 163. *Hypericum perforatum* (10).

27. VIOLACEAE

67. *Viola* L. 164. *Viola chelmea* (4); 165. *Viola reichenbachiana* (10); 166. *Viola kitabeliana* (10); 167. *Viola arvensis* 168. *Viola grisebachiana* (6,8); 169. *Viola herzogii* (7); 170. *Viola schariensis* (10); 171. *Viola elegantula* (10); 172. *Viola latisepala* (10); 173. *Viola macedonica* (10); 174. *Viola orphanidis* (10).

28. CISTACEAE

68. *Helianthemum* Miller 175. *Helianthemum nummularium* (10); 176. *Helianthemum oelandicum* (10).

29. CRUCIFERAE

69. *Alliaria* Scop 177. *Alliaria petiolata* (10); **70. *Arabidopsis*** (DC) Heynh 178. *Arabidopsis thaliana* (10); **71. *Erysimum*** L. 179. *Erysimum comatum* (10); 180. *Erysimum korabense* (10); 181. *Erysimum kuemmerlei* (10); **72. *Malcolmia*** R.Br. 182. *Malcolmia angulifolia* (10); **73. *Barbarea*** R. Br. 183. *Barbarea vulgaris* (10); 184. *Barbarea bracteosa* (10); 185. *Barbarea balcana* (10); **74. *Roripa*** Scop. 186. *Roripa pyrenaica* (4,8); **75. *Cardamine*** L. 187. *Cardamine bulbifera* (2,4,8); 188. *Cardamine enneaphylos* (10); 189. *Cardamine acris* (4,8); 190. *Cardamine glauca* (9); 191. *Cardamine impatiens* (5,8); 192. *Cardamine flexuosa* (8); **76. *Arabis*** L. 193. *Arabis sagitata* (10); 194. *Arabis allionii* (10); 195. *Arabis muralis* (10); 196. *Arabis turrita* (10); 197. *Arabis glabra* (10); 198. *Arabis scardica* (10); 199. *Arabis gracilis* (8); **77. *Lunaria*** L. 200. *Lunaria rediviva* (10); **78. *Alyssum*** L. 201. *Alyssum corymbosum* (10); 202. *Alyssum alyssoides* (10); 203. *Alyssum trichostachyum* (10); 204. *Alyssum scardicum* (10); 205. *Alyssum serpentinum* (7); **79. *Ptilotrichum*** C. A. Meyer 206. *Ptilotrichum rupestre* (8); **80. *Draba*** L. 207. *Draba scardica* (8); 208. *Draba dorfleri* (10). 209. *Draba korabensis* (10); 210. *Draba muralis* (10); **81. *Erophylla*** D.C. 211. *Erophylla verna* (2); **82. *Capsella*** Medic 212. *Capsella bursa pastoris* (10); **83. *Hutchinsia*** R.Br. 213. *Hutchinsia brevicaulis* (10); **84. *Thlaspi*** L. 214. *Thlaspi arvense* (10); 215. *Thlaspi microphyllum* (10); 216. *Thlaspi praecox* (10); **85. *Aethionema*** R.Br. 217. *Aethionema saxatile* (10); **86. *Iberis*** L. 218. *Iberis sempervirens* (10).

30. SALICACEAE

87. *Populus* L. 219. *Populus alba* (10); 220. *Populus tremula* (10); 221. *Populus nigra* (10); **88. *Salix*** L. 222. *Salix fragilis* (10); 223. *Salix alba* (10); 224. *Salix triandra* (9); 225. *Salix reticulata* (10); 226. *Salix retusa* (10); 227. *Salix alpine* (5,9); 228. *Salix silesiaca* (5); 229. *Salix cinerea* (10); 230. *Salix caprea* (10); 231. *Salix waldsteiniana* (5). 232. *Salix babilonica* (10).

31. ERICACEAE

89. *Bruckenthalia* Reichenb. 233. *Bruckenthalia spiculifolia* (2,3,4); **90. *Rhododendron*** L. 234. *Rhododendron ferruginea* (2,3,4); **91. *Vaccinium*** L. 235. *Vaccinium uliginosum* (10); 236. *Vaccinium myrtillus* (4,9)

32. PYROLACEAE

92. *Pyrola* L. 237. *Pyrola minor* (10); 238. *Pyrola media* (10); **93. *Orthilia*** Rafin. 239. *Orthilia secunda* (10);

**33. EMPETRACEAE**

94. *Empetrum* L. 238. *Empetrum nigra* (10).

34. PRIMULACEAE

95. *Primula* L. *Primula vulgaris* (10); 239. *Primula elatior* (10); 240. *Primula halleri* (10); 241. *Primula minima* (10); **96. *Androsaceae*** L. 242. *Androsaceae hedraeantha* (10); 243. *Androsaceae villosa* (10); **97. *Soldanella*** L. 244. *Saldonalla pindicola* (10).

35. TILIACEAE

98. *Tilia* L. 245. *Tilia tomentosa* (10); 246. *Tilia platyphyllos* (5).

36. MALVACEAE

99. *Malva* L. 247. *Malva moschata* (10). 248. *Malva sylvestris* (10); 249. *Malva neglecta* (10); **100. *Lavatera*** L. 250. *Lavandula thuringiaca* (10).

37. EUPHORBIACEAE

101. *Euphorbia* L. 251. *Euphorbia epithymoides* (5); 252. *Euphorbia glabriflora* (7); 253. *Euphorbia platyphyllos* (5); 254. *Euphorbia stricta* (4); 255. *Euphorbia helioscopia* (10); 256. *Euphorbia amygdaloides* (10).

38. THYMELACEAE

102. *Daphne* L. 257. *Daphne mezereum* (10); 258. *Daphne laureola* (10); 259. *Daphne oleoides* (10); **103. *Thymelaea*** Miller. 260. *Thymelaea passerina* (7).

39. ROSACEAE

104. *Rubus* L. 261. *Rubus idaeus* (5,9); 262. *Rubus discolor* (7); 263. *Rubus canescens* (10); 264. *Rubus lloydianus* (3); **105. *Rosa*** L. 265. *Rosa glauca* (10); 266. *Rosa pindulina* (10); 267. *Rosa canina* (10); 268. *Rosa dumalis* (10); 269. *Rosa corymbifera* (10); 270. *Rosa tomentosa* (10); 271. *Rosa villosa* (10); **106. *Sanguisorba*** L. 272. *Sanguisorba officinalis* (10); 273. *Sanguisorba minor* (10); **107. *Dryas*** L. 274. *Dryas octopetala* (10); **108. *Geum*** L. 275. *Geum reptans* (10); 276. *Geum montanum* (5,6,9); 277. *Geum rivale* (2,7,9); 278. *Geum coccineum* (10); 279. *Geum urbanum* (10); 280. *Geum molle* (4,5,6); **109. *Potentilla*** L. 285. *Potentilla argentea* (7); 286. *Potentilla inclinata* (10); 287. *Potentilla astracantha* (7); 288. *Potentilla detommasii* (10); 289. *Potentilla pedata* (10); 290. *Potentilla obscura* (9); 291. *Potentilla sulphurea* (10); 292. *Potentilla balcanica* (10); 293. *Potentilla montenegrina* (9); 294. *Potentilla aurea* (10); 295. *Potentilla ternate* (4,5,6,8,9); 296. *Potentilla reptans* (9); 297. *Potentilla doerfleri* (10); 298. *Potentilla speciosa* (10); **110. *Fragaria*** L. 299. *Fragaria vesca* (10); 300. *Fragaria moschata* (10); **111. *Alchemilla*** L. 301. *Alchemilla acutata* (4); 302. *Alchemilla bulgarica* (9); 303. *Alchemilla flabellate* (4); 304. *Alchemilla glaucescens* (8); 305. *Alchemilla pirinica* (4,5,8); 306. *Alchemilla serbica* (4); 307. *Alchemilla acutiloba* (4); 308. *Alchemilla crinite* (4); 309. *Alchemilla gracilis* (2); 310. *Alchemilla heterophylla* (4,5); 311. *Alchemilla monticola* (10); 312. *Alchemilla xanthochlora* (2); 313. *Alchemilla connivens* (8); 314. *Alchemilla effuse* (10); 315. *Alchemilla reniformis* (10); 316. *Alchemilla heterotricha* (8); 317. *Alchemilla fissa* (8); **112. *Aphanes*** L. 318. *Aphanes arvensis* (10); **113. *Pyrus*** L. 319. *Pyrus amygdaliformis* (10); 320. *Pyrus spinosa* (10); 321. *Pyrus cocomilia* (10); 322. *Pyrus avium* (10); **114. *Malus*** Miller 323. *Malus sylvestris* (7); 324. *Malus dasycarpa* (7); **115. *Sorbus*** L. 325. *Sorbus domestica* (1,2,5); 326. *Sorbus aucuparia* (1,2,3,4,5,7); 327. *Sorbus semipinnata* (4,5); 328. *Sorbus chamaemespilus* (1,2,3,8,9); **116. *Amelanchia*** Medicus 329. *Amelanchia ovalis* (10); **117. *Cotoneaster*** Medicus 330. *Cotoneaster integerrimus* (10); 331. *Cotoneaster nebrodensis* (10); **118. *Crataegus*** L. 332. *Crataegus monogyna* (10); 333. *Crataegus heldreichii* (10); 334. *Crataegus incana* (10); 335. *Crataegus sericeus* (10); **119. *Prunus*** L. (10).

40. GROSSULARIACEAE

120. *Ribes* L. 336. *Ribes uva-crispa* (10).

43. CRASSULACEAE

121. *Umbilicus* D.C. 337. *Umbilicus erectus* (10); **122. *Sempervivum*** L. 338. *Sempervivum kosaninii* (10); **123. *Jovibarba*** Opiz 339. *Jovibarba heuffelii* (10); **124. *Sedum*** L. 340. *Sedum ochroleucum*; 341. *Sedum acre* (10); 342. *Sedum sartorianum* (4,6,8); 343. *Sedum alpestre* (10); 344. *Sedum erythraeum* (10); 345. *Sedum flexuosum* (10); 346. *Sedum album* (10); 347. *Sedum dasycarpum* (10); 348. *Sedum magellense* (10); 349. *Sedum cepaea* (10); 350. *Sedum annuum* (10); 351. *Sedum rubens* (2); 352. *Sedum hispanicum* (10); 353. *Sedum pallidum* (10).

41. SAXIFRAGACEAE

125. *Saxifraga* L. 354. *Saxifraga rotundifolia* (10); 355. *Saxifraga bryoides* (10); 356. *Saxifraga tridactylites* (10); 357. *Saxifraga androsaceae* (10); 358. *Saxifraga exarata* (10); 359. *Saxifraga bulbifera* (10); 360. *Saxifraga scardica* (10); 361. *Saxifraga sempervivum* (10); 362. *Saxifraga paniculata* (10); **126. *Chrysosplenium*** L. 363. *Chrysosplenium alternifolium* (10).

42. PARNASSIACEAE

127. *Parnassia* L. 364. *Parnassia palustris* (10).

**43. LEGUMINOSAE**

128. Podocytisus Boiss. 365. *Podocytisus caramanicus* (2); **129. Cytisus** L. 366. *Cytisus nigricans* (2,8); **130. Chamaecytisus** Link. 367. *Chamaecytisus austriacus* (10); 368. *Chamaecytisus heuffelii* (8); **131. Genista** L. 369. *Genista depresa* (10); 370. *Genista hassertiana* (7); **132. Robina** L. 371. *Robina pseudoacacia* (3); **133. Galega** L. 372. *Galega officinalis* (1); **134. Colutea** L. 373. *Colutea arborescens* (10); **135. Astragalus** L. 374. *Astragalus depressus* (10); 375. *Astragalus australis* (10); **136. Oxytropis** DC. 376. *Oxytropis laponica* (4); 377. *Oxytropis campestris* (4,5); 378. *Oxytropis dinarica* (4); 379. *Oxytropis halleri* (6); 380. *Oxytropis purpurea* (10); **137. Vicia** L. 381. *Vicia icana* (10); 382. *Vicia sylvatica* (5); 383. *Vicia tetrasperma* (7); 384. *Vicia sepium* (10); 385. *Vicia panonica* (7); 386. *Vicia sativa* (10); 387. *Vicia lathyroides* (2); **138. Lathyrus** L. 388. *Lathyrus venetus* (1,3); 389. *Lathyrus laxiflorus* (10); 390. *Lathyrus tuberosus*; 391. *Lathyrus latifolius* (2); 392. *Lathyrus nissolia* (10); 393. *Lathyrus aphaca* (10); **139. Trigonella** L. 394. *Trigonella monspeliaca* (10); **140. Medicago** L. 395. *Medicago lupulina* (7); 396. *Medicago prostrata* 397. *Medicago minima* (10); **141. Trifolium** L. 398. *Trifolium montanum* (2); 399. *Trifolium repens* (10); 400. *Trifolium hybridum* (10); 401. *Trifolium pretense* (10); 402. *Trifolium vesiculosum* (2); 403. *Trifolium resupinatum* (10); 404. *Trifolium badium* (10); 405. *Trifolium velenovskyi* (10); 406. *Trifolium mycranthum* (10); 407. *Trifolium striatum* (2); 408. *Trifolium arvense* (10); 409. *Trifolium dalmaticum* (7); 410. *Trifolium noricum* (10); 411. *Trifolium hirtum* (10); 412. *Trifolium medium* (10); **142. Dorycnium** Miller 413. *Dorycnium herbaceum* (7); 414. *Dorycnium pentaphyllum* (7); **143. Lotus** L. 415. *Lotus corniculatus* (4); **144. Anthyllis** L. 416. *Anthyllis aurea* (4); 417. *Anthyllis vulneraria* var. *albana* (4); **145. Ornithopus** L. 418. *Ornithopus compressus* (7); **146. Coronilla** L. 419. *Coronilla elegans* (10); **147. Hippocrepis** L. 420. *Hippocrepis comosa* (10); 421. *Hippocrepis ciliata* (10); **148. Onobrychis** Miller 422. *Onobrychis pindicola* (7); 423. *Onobrychis alba* (10); 424. *Onobrychis montana* subsp. *scardica* (10).

44. PUNICACEAE

149. Circea L. 425. *Circea lutetiana* (8); **150. Epilobium** L. 426. *Epilobium parviflorum* (9); 427. *Epilobium montanum* (10); 428. *Epilobium lanceolatum* (10); 429. *Epilobium collinum* (10); 430. *Epilobium obscurum* (8); 431. *Epilobium roseum* (7); 432. *Epilobium palustre* (10); 433. *Epilobium alsinifolium* (10); 434. *Epilobium gemmascens* (10).

45. ANACARDIACEAE

151. Pistacia L. 435. *Pistacia terebinthus* (10).

46. ACERACEA

152. Acer L. 436. *Acer platanoides* (5,8); 437. *Acer tataricum* (2); 438. *Acer pseudoplatanus* (2); 439. *Acer heldreichii* (2,4,5); 440. *Acer obtusatum* (2); 441. *Acer hyrcanum* (var. *intermedium*, var. *paradoxum*) (8); 442. *Acer monspessulanum* var. *commutatum* (2).

47. HIPPOCASTANACEAE

153. Aesculus L. 443. *Aesculus hippocastanum* (10).

48. LINACEAE

154. Linum L. 444. *Linum capitatum* (10); 445. *Linum perenne* (10); 446. *Linum austriacum* (7); 447. *Linum hirsutum* (10); 448. *Linum catharticum* (10).

49. OXALIDACEAE

155. Oxalis L. 449. *Oxalis acetosella* (10).

50. GERANIACEAE

156. Geranium L. 450. *Geranium macrorrhizum* var. *subcaulescens* (10); 451. *Geranium sylvaticum* (10); 452. *Geranium reflexum* (10). 453. *Geranium aristatum* (10); 454. *Geranium pyrenaiicum* (10); 455. *Geranium molle* (1,2); 456. *Geranium columbinum* (7); 457. *Geranium dissectum* (10); 458. *Geranium lucidum* (10); 459. *Geranium robertianum* (10).

51. POLYGALACEAE

157. Polygala L. 460. *Polygala major* (7); 461. *Polygala comosa* (7); 462. *Polygala vulgaris* (10).

52. CORNACEAE

158. Cornus L. 463. *Cornus mas* (1,2,3,7); 464. *Cornus sanguinea* (1,2,3,7).

53. ARALIACEAE

159. Hedera L. 465. *Hedera helix* (1,2,3,7).

54. UMBELLIFERAE

160. Sanicula L. 466. *Sanicula europea* (10); **161. Astrantia** L. 467. *Astrantia major* (10); **162. Eryngium** L. 468. *Eryngium creticum* (10); 469. *Eryngium serbicum* (10); **163. Myrrhoides** Heister ex Fabr. (syn.: **Physocaulis**) 470. *Myrrhoides nodosa* (10); **164. Chaerophyllum** L. 471. *Chaerophyllum hirsutum* (10); 472. *Chaerophyllum bulbosum* (10); 473. *Chaerophyllum temulum* (10); **165. Smyrniacum** L. 474. *Smyrniacum perfoliatum* (10); **166. Huetia** Boiss 475. *Huetia cynapioides* (10); **167. Pimpinella** L. 476. *Pimpinella saxifraga* (10); **168. Aegopodium** L. 477. *Aegopodium podagraria* (10); **169. Seseli** L. 478. *Seseli peucedanoides* (10); **170. Athamanta** L. 479. *Athamanta haynaldii* (10);



171. Meum Miller 480. *Meum athamanticum* (10); **172. Physospermum** Cusson 481. *Physospermum cornubiense* (10); **173. Bupleurum** L. 482. *Bupleurum commutatum* (10); 483. *Bupleurum falcatum* (10); **174. Trinia** Hoffm. 484. *Trinia glauca* (10); 485. *Trinia dalechampii* (10); **175. Carum** L. 486. *Carum carvi* (10); 487. *Carum multiflorum* (10); **176. Cnidium** Cusson 488. *Cnidium* (10); **177. Peucedanum** L. 489. *Peucedanum oligophyllum* (10); 490. *Peucedanum aegopodioides* subsp. *urens* (10); **178. Pastinaca** L. subsp. 491. *Pastinaca* (10); **179. Heracleum** L. 492. subsp. *pyrenaicum* (10).

55. CELASTRACEAE

180. Evonymus L. 493. *Evonymus latifolius* subsp. *fallax* (10).

56. RHAMNACEAE

181. Rhamnus L. 494. *Rhamnus pumila* (10)

57. SANTALACEAE

182. Thesium L. 495. *Thesium parnassi* (10); 496. *Thesium alpinum* (10).

58. RUBIACEAE

183. Cruciata Mill. 497. *Cruciata laevipes* (3).

59. OLEACEAE

184. Fraxinus L. 498. *Fraxinus ornus* (1,2,3,7,9); 499. *Fraxinus excelsior* (1,2,3,7,9); **185. Ligustrum** L. 500. *Ligustrum vulgare* (1).

60. CAPRIFOLIACEAE

186. Sambucus 501. *Sambucus nigra* (10); 502. *Sambucus ebulus* (10).

61. GENTIANACEAE

187. Centaurium Hill 503. *C. erythraea* (1,2,3,5,7,8); **188. Gentiana** L 504. *Gentiana lutea* (6); 505. *Gentiana punctata* (6); 506. *Gentiana asclepiadea* (6); 507. *Gentiana cruciata* (6). 508. *Gentiana verna* subsp. *balcanica* (6); 509. *Gentiana ultriculosa* (6); 510. *Gentiana ciliate* (6); 511. *Gentiana bulgarica* var. *albanica* (6); **189. Gentianella** Moench. (6)

62. CONVULVULACEAE

190. Cuscuta L. 512. *Cuscuta approximata* (10); **191. Calystegia** R.Br. 513. *Calystegia silvatica* (10); **192. Convolvulus** L. 514. *Convolvulus compactus* (10).

63. BORAGINACEAE

193. Cerinte L.515. *Cerinte glabra* (10); **194. Alkaana** Tausch 516. *Alkane scardica* (1,2); **195. Echium** L. 517. *Echium vulgare* (1,2); **196. Pulmonaria** L. 518. *Pulmonaria rubra* (1,2); **197. Symphytum** L. 519. *Symphytum tuberosum* (1,2,3); **198. Anchusa** L. (incl. *lycopsis*) 520. *Anchusa officinalis* (1,3); 521. *Anchusa cretica* (1,2,3); **199. Myosotis** L. 522. *Myosotis stricta* (1,2,3,); 523. *Myosotis sylvatica* (1,2,3,5,7); 524. *Myosotis alpestris* (2,4,5,8,9); 525. *Myosotis stenophylla* (2,4,5); 526. *Myosotis suaveolns* (2,4); 527. *Myosotis scorpioides* (10); **200. Cynoglossum** L. 528. *Cynoglossum officinale* (10).

64. SCROPHULARIACEAE

201. Linaria L. 529. *Linaria alpina* (4,6,8); **202. Digitalis** L. 530. *Digitalis ferruginea* (4,5).

65. PLANTAGINACEAE

203. Plantago L. 531. *Plantago major* (10); 532. *Plantago lanceolata* (10).

66. LAMIACEAE

204. Sideritis 533. *Sideritis scardica* (8).

67. CAMPANULACEAE

205. Edraianthus A.DC. 534. *Edraianthus graminiflorus* (8).

68. ASTERACEAE (COMPOSITAE)

206. Thusilago L. 535. *Thusilago farfara* (10); **207. Anthemis** L. 536. *Anthemis arvensis* (10); 537. *Anthemis cotula* (10); **208. Erigeron** L. 538. *Erigeron alpinus* (4,5,6,8); **209. Matricaria** L. 539. *Matricaria chamomilla* (10); **210. Bellis** L 540. *Bellis perenis* (10); **211. Leucantemum** Mill. 541. *Leucantemum vulgare* (10); **212. Achillea** L. 542. *Achillea clypeolata* (10); 543. *Achillea millefolium* (10).

69. MELANTHIACEAE

213. Veratrum L. 544. *Veratrum album* (4,6,8).

**70. LILIACEAE**

214. *Scilla* L. 545. *Scilla bifolia* (10).

71. SMILACACEAE

215. *Smilax* L. 546. *Smilax aspera* (3).

72. POACEAE

216. *Melica* L. 547. *Melica ciliate* (10); **217. *Andropogon*** L. 548. *Andropogon grillus* (10); **218. *Haynaldia*** 549. *Haynaldia villosa* (10); **219. *Poa*** 550. *Poa compressa* (10); **220. *Hordeum*** L. 551. *Hordeum murinum* (1); **221. *Bromus*** L. 552. *Bromus sterilis* (10).

Tabela nr. 2. The total number of families, genus and specie of Sharr Mountain

Number of families	Number of genus	Number of species
72	221	552

CONCLUSION

In domestic and foreign authors' publications, it is said that Flora in the Sharr Mountain exists in around 2000 types.

The so far partial conclusion of the accumulated material, contains 590 types, which belong to 216 genders and 70 families. These data prove for a rich Flora of the Sharr massif.

Analyzing and comparing our material with the one known so far for Macedonia there can be noticed a highlighted similarity and a high number of endemic plants.

Wide areas in all heights of Sharr Mountain have species of following families: Ranunculaceae, Caryophyllaceae, Crucifera, Rosaceae, Leguminosae, and Umbelliferae.

Also, from the used literature it can be noticed that there are no data for the plants of the "Composite and monocotyledon plants" family and a high number of families with a small number of plants.

The further processing of the Flora of the Sharr Mountain in the study will complete the number of the species that exist in the Sharr Mountain Flora.

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