

FLORA AND VEGETATION OF THE PROTECTED AREA ELENINA BARA IN THE LYULIN MOUNTAIN

V. VUTOV and D. DIMITROV

Bulgarian Academy of Sciences, National Natural History Museum, 1000 Sofia, Bulgaria

Abstract

VUTOV, V. and D. DIMITROV, 2015. Flora and vegetation of the protected area Elenina bara in the Lyulin Mountain. *Bulg. J. Agric. Sci.*, 21: 277–281

The flora and vegetation of the protected area Elenina bara in Lyulin Mountain has been investigated for the first time. Located in Vitosha floristic region, it encompasses 205 vascular plants (mosses excluded), belonging to 153 genera and 47 families. Five of them are Balcan endemics, one is with protected status, one is included in the CITES convention, and 4 are from annex 4 of the Biodiversity Law.

The hemicryptophytes are the predominant life-form (141 species), followed by the phanerophytes (32 species), geophytes (16 species), therophytes (6 species), 1 chamaephyte; annual to biannual – 6, biannual – 2.

Key words: taxonomic composition, Balkan endemic, new species for Vitosha floristic region, plants community, protected area end species, flora and vegetation

Introduction

The protected area Elenina bara is situated at the North-east slopes of the Lyulin Mountain (mnt), above the village of Malo Buchino, to the Northeast of the Lyulin highway. It spans over an area of 5 ha. It was given the status of a Natural phenomenon with an order № 120 from July 2nd, 1968 of the Ministry of Forestry and Forest Industry and assigned a number № 226 in the State registry. It was further assigned a new category – Protected area with an order RD from August 8th 2003, situated on the land of the village of Malo Buchino, Ovcha Kupel region. This Protected area has not been studied so far. The first investigation of the flora of the Lyulin Mountain was performed by I. Neichev (1905) followed by Urumov (1929). Kitanov (1936) reported on several new species for the flora of the Lyulin Mountain. Then Iordanov and Vulev (1947) found *Ribes multiflorum* Kit. ex Roemer and Schultes – a new species for the flora of Bulgaria. Ganchev (1952) studied

the Eastern part of the Lyulin Mountain and reported on new species for its flora in 1952.

The climate is temperate continental. The average annual temperature is 9.3°C, with a 19.7°C maximum in July and – 2.1°C minimum in January (data obtained at the Bankya Weather station). The annual precipitation is 688 mm, with a 92 mm maximum in July and a 36 mm minimum in March. A secondary maximum of 74 mm is also observed in December, which is a confirmation of the temperate continental climate.

Materials and Methods

The investigations, reported in the present work, were conducted in the spring and summer of 2012. The routing and trans section methods were used. The herbaria materials were determined according to Jordanov (1963–1982), Kozuharov and Kuzmanov (1995), Peev (2012). Brown forest soil was established. Rocks contained andesite and

*E-mail: v_vutov @ abv.bg; dimitrov.npm@gmail.com

andesite bunt sand stein. The terrain is steep, 35–40° in its upper part. In the lowest part of the protected area, the Danchova Cheshma spring and the brook of Elenina bara, a feeder of the Lyulinska River, are found. After the village of Ivaniane it is being named Sheovitca and streams into the Kakach River (feeder of the Iskar River) at the Republika residential area. The studied area has the status of a protected one. Nevertheless, traces of ATV tracks were present and no red line marking the boundaries of the protected areas were available. In the highest part, evidence of treasure-hunters activities were seen (such works are strictly prohibited).

Results

The flora of the protected area of Elenina bara encompasses 205 vascular plants (mosses excluded), belonging to 153 genera and 47 families. (Table 1)

The forest is composed of deciduous species: common hornbeam (*Carpinus betulus* L.), beech (*Fagus sylvatica* L.), maple (*Acer campestre* L.), sycamore maple (*Acer pseudoplatanus* L.), Norway maple (*Acer platanoides* L.), Common Hazel (*Corylus avellana* L.), Turkish hazel (*Corylus colurna* L.). The age of the forest is over 90 years. It is classified as habitat type oak-hornbeam 9170 – Galio-Carpinetum (Kavrukova, Dimova, Dimitrov, Tsonev and Belev 2005).

The under story includes *Polygonatum latifolium* (Jacq.) Desf., *Sanicula europaea*, L. *Evonymus europaeus* L., *Melica uniflora* Retz., *Helleborus odoratus* Waldst & Kit., *Primula veris* L., *Hedera helix* L., *Poa nemoralis* L., *Cardamine bulbifera* (L.) Crantz, *Galium pseudoaristatum* Schur, *Galium odoratum* (L.) Scop., *Lathyrus vernus* Bernh., *Smyrniium perfoliatum* L., *Scilla bifolia* L., *Alliaria petuliata* (M. Bieb.) Cavara & Grande, *Arabis turrita* L., *Stellaria holostea* L. and *Ranunculus ficaria* L..

Aspect species in spring are: *Corydalis slivenensis* Velen., *Anemone ranunculoides* L. and *Isopyrum thalictroides* L. On meadows at the Northwest slope a community of *Acer campestre* + *Fraxinus ornus* is found.

Table 1

Taxonomic composition and flora of the protected area

Division/subdivision	Families	Genera	Species
Pteridophyta	2	2	2
Magnoliophyta			
Monocotyledonae	8	34	43
Dicotyledonae	37	117	160
Total	47	153	205

In the young emerging forest there is a community of *Primula veris* 3 III, *Dactylis glomerata* 4 III, *Helleborus odoratus* 2 I, *Waldstenia geoides* 1 I, *Fragaria vesca* 1 I, *Alyssum tortuosum* 1 I, *Luzula campestris* 1 I, *Viola canina* 1 I, *Sedum maximum* 1 I, *Arum maculatum* 1 I, *Ferulago sylvatica* 1 I, *Rosa canina* 1 I, *Corydalis solida* 1 I, *Viburnum opulus* 1 I, *Potentilla micrantha* 1 I, *Crataegus monogyna* 1 I, *Phleum pratense* 1 I, *Verbascum phoeniceum* 1 I, *Ranunculus ficaria* 1 I, *Thymus glabrescens* 1 I, *Veronica austriaca* ssp. *jacquinii* 1 I, *Erophila verna* 1 I, *Thlaspi perfoliatum* 1 I, *Teucrium chamaedrys* 1 I, *Ligustrum vulgare* 1 I, *Campanula lingulata* 1 I, *Potentilla obscura* 1 I, *Gagea lutea* 1 I, *Viola aetolica* 1 I, *Crucianella angustifolia* *Arabis sagittata* 1 I and *Lychnis coronaria* 1 I.

Conclusions

Noteworthy is the low presence of the *Polypodiophyta* division – only two representatives: *Polypodium vulgare* L. and *Cystopteris fragilis* (L) Bernh. The species *Galanthus elwesii* Hook f is with protected status – endangered species EN B 1 ab (ii,iii, iv, v) + 2ab (ii); C 2a(i) (Evstatieva, 2009), included in Appendix 3 of the Biodiversity Law. The species *Epipactis helleborine* (L) Krantz is included in the CITES convention. The species *Lilium martagon* L., *Asphodelus albus* Nill., *Scilla bifolia* L. and *Echinops banaticus* Rich. et Schrad are included in Appendix 4 of the Biodiversity Law. The floral complex of the protected territory also includes 5 Balkan endemics: *Dianthus cruentus* Griseb., *Scabiosa triniifolia* Friv., *Trifolium heldreichianum* Hausskn., *Trifolium medium* ssp. *balcanicum* Vel and *Viola aetolica* Boiss et Heldr.

The hemicryptophytes are the predominant life-form (141 species), followed by the phanerophytes (32 species), geophytes (16 species), therophytes (6 species), 1 chamaephyte; annual to biannual – 6, biannual – 2. (Appendix 1)

Trifolium heldreichianum Hausskn., *Alyssum tortuosum* Wild. and *Viola aetolica* Boiss et Heldr. are new species for the Vitosha floristic region.

Appendix 1. List of the plant species found in the protected area

Polypodiophyta

I. Athyriaceae

1. *Cystopteris fragilis* (L.) Bernh.

II. Polypodiaceae

2. *Polypodium vulgare* L.

Magnoliophyta

III. Aceraceae

3. *Acer campestre* L.
4. *Acer hyrcanum* Fich. & C. A. Mey.
5. *Acer platanoides* L.
6. *Acer pseudoplatanus* L.
7. *Acer tataricum* L.

IV. Adoxaceae

8. *Adoxa moschatellina* L.

V. Amaryllidaceae

9. *Galanthus elwesii* Hook.f.

VI. Apiaceae

10. *Aegopodium podagraria* L.
11. *Anthriscus sylvestris* (L.) Hoffm.
12. *Daucus carota* L.
13. *Ferulago sylvatica* (Besser) Rchb.
14. *Heracleum sibiricum* L.
15. *Sanicula europaea* L.
16. *Smyrniium perfoliatum* L.
17. *Tordylium maximum* L.

VII. Araceae

18. *Arum maculatum* L.

VIII. Araliaceae

19. *Hedera helix* L.

IX. Aristolochiaceae

20. *Asarum europaeum* L.

X. Asteraceae

21. *Achillea millefolium* L.
22. *Anthemis tinctoria* L.
23. *Carduus candicans* Waltst. et Kit.
24. *Centaurea rhenana* Boreau
25. *Chondrilla juncea* L.
26. *Cichorium inthybus* L.
27. *Cirsium ligulare* Boiss.
28. *Echinops banaticus* Roch. ex Chrad.
29. *Lapsana communis* L.
30. *Leontodon crispus* Vill. ssp. *asperimus* (Willd.) Finch et P. Sell
31. *Mycelis muralis* (L.) Dumort.
32. *Picris hieracioides* L.
33. *Senecio papposus* (Rhb.) Less.
34. *Scorzonera hispanica* L.

35. *Tanacetum corymbosum* (L.) Sch. et Bip.

XI. Betulaceae

36. *Carpinus betulus* L.
37. *Corylus avellana* L.
38. *Corylus colurna* L.

XII. Boraginaceae

39. *Pulmonaria officinalis* L.
40. *Symphytum tuberosum* L.

XIII. Brassicaceae

41. *Alliaria petiolata* (M. Bieb.) Cavara & Grande
42. *Alyssum tortuosum* Willd.
43. *Arabis sagittata* (Bertol.) D C.
44. *Arabis turritta* L.
45. *Cardamine bulbifera* (L.) Crantz
46. *Erysimum diffusum* Erh.
47. *Erophilla verna* (L.) Chevall.
48. *Thlaspi perfoliatum* L.

XIV. Campanulaceae

49. *Campanula lingulata* Waldst. & Kit.
50. *Campanula trachelium* L. ssp. *trachelium*

XV. Caprifoliaceae

51. *Sambucus nigra* L.
52. *Viburnum lantana* L.
53. *Viburnum opulus* L.

XVI. Caryophyllaceae

54. *Dianthus cruentus* Griseb.
55. *Lychnis coronaria* (L.) Desr.
56. *Silene italica* (L.) Pers.
57. *Stellaria holostea* L.

XVII. Celastraceae

58. *Evonymus europaeus* L.
59. *Evonymus verrucosus* Scop.

XVIII. Cornaceae

60. *Cornus mas* L.
61. *Cornus sanguinea* L.

XIX. Crassulaceae

62. *Sedum maximum* (L.) Suter

XX. Cyperaceae

63. *Carex divulsa* Stokes ssp. *divulsa*
64. *Carex muricata* L.
65. *Scirpus sylvaticus* L.

XXI. Dipsacaceae

66. *Knautia drymeja* Heuff.
67. *Scabiosa triniifolia* Friv.
68. *Succisa pratensis* Moench

XXII. Euphorbiaceae

69. *Euphorbia amygdaloides* L.
70. *Euphorbia cyparissias* L.
71. *Mercurialis perennis* L.

XXIII. Fabaceae

72. *Chamaecytisus hirsutus* (L.) Link
 73. *Coronilla varia* L.
 74. *Lathyrus niger* (L.) Bernh.
 75. *Lathyrus pratensis* L.
 76. *Lathyrus venetus* (Nill.) Wohls.
 77. *Lathyrus vernus* Bernh.
 78. *Medicago falcata* L.
 79. *Ononis arvensis* L. var. *spinescens* (Ledeb.) Garcke
 80. *Trifolium alpestre* L.
 81. *Trifolium arvense* L.
 82. *Trifolium heldreichianum* Hausskn.
 83. *Trifolium hybridum* L.
 84. *Trifolium medium* L. ssp. *balcanicum* Velen.
 85. *Trifolium pratense* L.
 86. *Vicia varia* Host.
- XXIV. Fagaceae
 87. *Quercus cerris* L.
 88. *Quercus dalechampii* Ten.
 89. *Fagus sylvatica* L.
- XXV. Geraniaceae
 90. *Geranium sanguineum* L.
- XXVI. Hypericaceae
 91. *Hypericum perforatum* L.
 92. *Hypericum tetrapterum* Fries
- XXVII. Iridaceae
 93. *Iris variegata* L.
 94. *Crocus flavus* Weston
- XXVIII. Juncaceae
 95. *Juncus effusus* L.
 96. *Juncus inflexus* L.
 97. *Luzula campestris* (L.) Lam. & DC.
 98. *Luzula luzulina* (Vill.) Dalla Torre & Sarnth.
- XXIX. Lamiaceae
 99. *Ajuga laxmannii* (L.) Benth.
 100. *Betonica officinalis* L.
 101. *Clinopodium vulgare* L.
 102. *Glechoma hederacea* L.
 103. *Origanum vulgare* L.
 104. *Scutellaria altissima* L.
 105. *Scutellaria hastifolia* L.
 106. *Teucrium chamaedrys* L.
 107. *Thymus glabrescens* Willd.
- XXX. Liliaceae
 108. *Asphodelus albus* Mill.
 109. *Allium guttatum* (Steven) Regel
 110. *Colchicum autumnale* L.
 111. *Erythronium dens – canis* L.
 112. *Gagea lutea* (L.) Ker.- Gaw.
 113. *Lilium martagon* L.
 114. *Polygonatum odoratum* (Mill.) Druce
 115. *Scilla bifolia* L.
 116. *Veratrum lobelianum* Bernh.
- XXXI. Lythraceae
 117. *Lythrum salicaria* L.
- XXXII. Oleaceae
 118. *Fraxinus ornus* L.
 119. *Ligustrum vulgare* L.
- XXXIII. Onagraceae
 120. *Epilobium hirsutum* L. var. *hirsutum*
- XXXIV. Orchidaceae
 121. *Dactylorhiza sambucina* (L.) Soo
 122. *Epipactis helleborine* (L.) Grantz
- XXXV. Papaveraceae
 123. *Corydalis marschalliana* (Paull.) Pers var. *marschalliana*
 124. *Corydalis slivenensis* Velen. var. *subintegra* D. Jord. et Koz.
- XXXVI. Poaceae
 125. *Agrostis capillaris* L.
 126. *Agrostis castellana* Bois & Reut.
 127. *Alopecurus pratensis* L.
 128. *Arrhenatherum elatius* (L.) P. Beauv. ex J. & C.Presl.
 129. *Brachypodium pinnatum* (L.) P. Beauv.
 130. *Bromus ramosus* Huds.
 131. *Briza media* L.
 132. *Dactylis glomerata* L.
 133. *Danthonia alpina* Vest.
 134. *Deschampsia caespitosa* (L.) P. Beauv.
 135. *Elymus hispidus* (Opiz) Melderis ssp. *hispidus*
 136. *Festuca heterophylla* Lam.
 137. *Festuca valesiaca* Schleich. ex Gaudin
 138. *Glyceria fluitans* (L.) R. Br.
 139. *Melica ciliata* L.
 140. *Melica uniflora* Retz.
 141. *Milium effusum* L.
 142. *Phleum phleoides* (L.) Karst.
 143. *Phleum pratense* L.
 144. *Poa nemoralis* L.
 145. *Trisetum flavescens* (L.) P. Beauv.
- XXXVII. Polygonaceae
 146. *Bilderdykia convolvulus* (L.) Dumort.
 147. *Rumex acetosa* L.
 148. *Rumex conglomerates* Murr.
 149. *Rumex sanguineus* L.
- XXXVIII. Primulaceae
 150. *Lysimachia nummularia* L.
 151. *Lysimachia vulgaris* L. ssp. *glanduloso-villosa* (Beck) Peev
 152. *Primula veris* L.

XXXIX. Ranunculaceae

153. *Aconitum variegatum* L.
 154. *Anemone ranunculoides* L.
 155. *Ranunculus fallax* Wimm. et Grab. var.
digitalifolius (Jas.) Penev
 156. *Clematis vitalba* L.
 157. *Helleborus odoratus* Waldst. et Kit.
 158. *Hepatica nobilis* Mill.
 159. *Isopyrum thalictroides* L.
 160. *Ranunculus ficaria* L.
 161. *Ranunculus millefoliatus* Vahl.
 162. *Ranunculus auricomus* L.

XL. Rosaceae

163. *Agrimonia eupatoria* L.
 164. *Amygdalus nana* L.
 166. *Aremonia agrimonoides* (L.) D C.
 167. *Crataegus monogyna* Jacq.
 168. *Filipendula vulgaris* Lam.
 169. *Fragaria vesca* L.
 170. *Geum urbanum* L.
 171. *Potentilla argentea* L.
 172. *Potentilla micrantha* Ramond ex DC.
 173. *Potentilla obscura* Willd.
 174. *Potentilla reptans* L.
 175. *Prunus avium* L.
 176. *Prunus cerasifera* Ehrh.
 177. *Prunus spinosa* L.
 178. *Pyrus pyraeaster* Burgsd.
 179. *Rosa canina* L.
 180. *Sorbus aria* (L.) Grantz
 181. *Waldsteinia geoides* Willd.

XLI. Rubiaceae

182. *Crucianella angustifolia* L.
 183. *Cruciata laevipes* Opiz
 184. *Galium album* Miller
 185. *Galium lucidum* All.
 186. *Galium odoratum* (L.) Scop.
 187. *Galium pseudoaristatum* Schur
 188. *Galium verum* L.

XLII. Salicaceae

189. *Populus tremula* L.
 190. *Salix alba* L.

XLIII. Saxifragaceae

191. *Ribes uva-crispa* L.
 192. *Saxifraga rotundifolia* L.

XLIV. Scrophulariaceae

193. *Digitalis lanata* Ehrh.
 194. *Linaria genistifolia* (L.) Mill.
 195. *Odontites serotina* (Lam.) Dumort.
 196. *Verbascum abietinum* Borbas
 197. *Verbascum phoeniceum* L.
 198. *Veronica scardica* Griseb.
 199. *Veronica jacquinii* Baumg.

XLV. Tiliaceae

200. *Tilia platyphyllos* Scop.

XLVI. Urticaceae

201. *Urtica dioica* L.

XLVII. Violaceae

202. *Viola aetolica* Boiss & Heldr.
 203. *Viola canina* L.
 204. *Viola hirta* L.
 205. *Viola odorata* L.

Acknowledgements

We acknowledge the partial support by the European Project EMAP (FP7-PEOPLE-2009-IRSES) № 247548

References

- Evstatieva, L.**, 2009. *Galanthus elwesii* Hook. f. In: A. Petrova and V. Vladimirov (Eds). Red List of Bulgarian vascular plant. *Phytol. Balcan.*, **15** (1): 63–94.
- Ganchev, I.**, 1952a. Floral canopy of the East Lyulin Mountain, *BAS*, pp. 191 (Bg).
- Ganchev, I.**, 1953b. New plant species for the flora of Lyulin Mountain. *Izvestia Bot. Inst.*, **3**: 227–236 (Bg).
- Jordanov, D.** (ed.), 1963–1982. Flora of Bulgaria, *BAS Publishing*, Sofia, **1–8** (Bg).
- Jordanov, D. and S. Vulev**, 1947. A new shrub species for Bulgaria. *Godishnik Sofia Univ. "St. Kliment Ohridski"*, *PMP*, **31** (3): 91–95 (Bg).
- Kavrukova, B., D. Dimova, M. Dimitrov, R. Tsonev and T. Belev**, 2005. Manual for the determination of the habitats of European significance in Bulgaria, pp. 128 (Bg).
- Kitanov, B.**, 1936. New rare species for the Bulgarian flora. *Izvestia Bulg. Bot. Druj.*, **7**: 116–123 (Bg).
- Kozuharov, S. and Kuzmanov, B.**, 1995. Flora of Bulgaria, *BAS Publishing*, Sofia, **10** (Bg).
- Neichev, I.**, 1905. Materials on the flora of the Lyulin Mountain. *Sborn. Nar. Umotvorenia*, **22**: 1–20 (Bg).
- Peev, D.** (ed.), 2012. Flora of Bulgaria, *BAS Publishing*, **11** (Bg).
- Urumov, I.**, 1929. Flora of the Lyulin Mountain. *Spis. BAS*, **40**: 1–117 (Bg).