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## **Mediterranean, Submediterranean and Illyric floristic elements in the Kosovo flora (Yugoslavia)**

### **Abstract**

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The 1360 vascular plant species of which the flora of the Kosovo region consists have been analysed and assigned to 14 main floristic elements. Of these, three are here treated in detail, the Mediterranean element (72 species), the Submediterranean element (129 species), and the Illyric element (51 species), in turn subdivided into more narrowly defined groups.

### **Introduction**

For phytogeographical purposes a flora can be classified into historical-genetic elements (geo-elements in the sense of Walter 1954), or into floristic elements on the basis of present distribution (Meusel 1943). The latter I have done, both on the basis of literature and of my own observations, in analysing the c. 1360 species of higher plants known from the Kosovo region. I have classified them into 14 main floristic elements: Balkanic (360 species, or 26.49 %), Mediterranean (72 species, or 5.23 %), Submediterranean (129 species, or 9.56 %), Pontic (72 species, or 5.23 %), Carpathic (7 species, or 0.51 %), Pannonian-Balkan (3 species, or 0.22 %), Mesic (12 species, or 0.88 %), arctic (17 species, or 1.25 %), Illyric (52 species, or 3.80 %), Alp (81 species, or 5.96 %), European (265 species, or 19.49 %), Eurasian (230 species, or 16.92 %), circumpolar (50 species, or 3.67 %), and boreal (10 species, or 0.73 %). During this analysis (see Rexhepi 1986) I have first concentrated on endemic species of the Balkan floristic element, but also on the other elements, because from their presence one may better understand the phytogeographical affinities of the region investigated.

In this paper, the members of the Mediterranean, Submediterranean and Illyric floristic elements of the Kosovo flora will be enumerated, which constitute a significant part of its total.

The Kosovo territory is situated in the central Balkan Peninsula. It is formed of two plains – Kosovo and Dukagjin – surrounded by the outliers of the Šara planina, the Albanian Alps, Mt Kopaonik, etc. It culminates at 2656 m a.s.l. (Mt Gjeravicë in the Albanian Alps) and descends to 265 m a.s.l. in the White Drin valley. Most of the territory belongs

to the hill and mountain zone. The geology is varied and interesting, with old rocks of different type and origin (carbonate, silicate and ophiolitic bedrock) prevailing (Rexhepi 1983).

By virtue of its geographical position and relief, its distance from the sea, the influence of the Mediterranean climate penetrating through the White Drin valley, etc., Kosovo's climate is transitional between an average continental climate and Mediterranean climates (Rexhepi 1978: 8). Mediterranean climatic influences can be observed in the lower regions and up to nearly 800 m a.s.l., where a great number of Mediterranean and Submediterranean species can be found (Rexhepi 1985). Illyric species are also present there, because of Kosovo's belonging to the Illyrian domain.

## 1. Mediterranean floristic element

This element is here understood in a wide sense, as defined by Wulf (1944) and Horvatić (1963). It comprises plants that have their centre of distribution in the countries bordering the Mediterranean sea, in S. Europe, the Middle East and N. Africa. Within it, the following groups can be distinguished.

### A. Widespread Mediterranean plants

This group includes plants that are widespread throughout most or all of the Mediterranean region.

|                               |                                  |                                |
|-------------------------------|----------------------------------|--------------------------------|
| <i>Acanthus balcanicus</i>    | <i>Galanthus nivalis</i>         | <i>Pyrus amygdaliformis</i>    |
| <i>Alopecurus utriculatus</i> | <i>Helianthemum salicifolium</i> | <i>P. pyraster</i>             |
| <i>Alyssum corymbosum</i>     | <i>Hippocrepis comosa</i>        | <i>Salvia argentea</i>         |
| <i>A. microcarpum</i>         | <i>Iris germanica</i>            | <i>S. sclarea</i>              |
| <i>A. montanum</i>            | <i>Juniperus oxycedrus</i>       | <i>Scilla autumnalis</i>       |
| <i>Arceuthobium oxycedri</i>  | <i>Linum angustifolium</i>       | <i>S. bifolia</i>              |
| <i>Asyneuma limoniifolium</i> | <i>Lobularia maritima</i>        | <i>Scolymus hispanicus</i>     |
| <i>Bromus squarrosus</i>      | <i>Nigella damascena</i>         | <i>Silene italica</i>          |
| <i>Bupleurum praealtum</i>    | <i>Onobrychis viciifolia</i>     | <i>Tamus communis</i>          |
| <i>Calamintha acinos</i>      | <i>Orlaya grandiflora</i>        | <i>Teucrium chamaedrys</i>     |
| <i>Cardamine graeca</i>       | <i>Ornithopus compressus</i>     | <i>Trifolium angustifolium</i> |
| <i>Cephalaria leucantha</i>   | <i>Parentucellia latifolia</i>   | <i>T. scabrum</i>              |
| <i>Colutea arborescens</i>    | <i>Physospermum cornubiense</i>  | <i>Trinia glauca</i>           |
| <i>Coronilla scorpioides</i>  | <i>Pistacia terebinthus</i>      | <i>Tuberaria guttata</i>       |
| <i>Daphne oleoides</i>        | <i>Psoralea bituminosa</i>       | <i>Valerianella coronata</i>   |
| <i>Echium italicum</i>        | <i>Pterocephalus plumosus</i>    | <i>Vinca major</i>             |
| <i>Ficus carica</i>           |                                  |                                |

### B. East Mediterranean plants

This group includes plants with a centre of distribution in the East Mediterranean region:

|                                |                             |                               |
|--------------------------------|-----------------------------|-------------------------------|
| <i>Convolvulus althaeoides</i> | <i>Euphorbia myrsinites</i> | <i>Juniperus foetidissima</i> |
|--------------------------------|-----------------------------|-------------------------------|

**C. Subatlantic-Mediterranean plants**

This group includes plants that from the Mediterranean area radiate into the Atlantic and Subatlantic region:

*Trifolium molinieri*

**D. West Mediterranean plants**

This group includes plants that occur mainly in the W. Mediterranean area:

*Anthericum liliago*

**E. Mediterranean-Pontic plants**

These plants placed in this group combine features of the Mediterranean and Sarmatic-Iranocaspic floristic elements:

*Chelidonium majus*

*Linum tenuifolium*

*Teucrium polium*

*Chrysopogon gryllus*

*Marrubium peregrinum*

*Trifolium resupinatum*

*Haynaldia villosa*

**F. Central-European Mediterranean plants**

Such plants are distributed in the Mediterranean region, Central Europe, W. Asia and N. Africa :

*Ballota nigra*

*Prunella laciniata*

*Viola kitaibeliana*

*Chaenorhinum minus*

**2. Submediterranean floristic element****A. Widespread Submediterranean plants:**

*Achillea setacea*

*Calamintha grandiflora*

*Crepis setosa*

*Adonis microcarpa*

*C. nepeta*

*Crocus biflorus*

*Aira capillaris*

*Caltha laeta*

*Dactylorhiza maculata*

*Anemone apennina*

*Carthamus lanatus*

*Dianthus carthusianorum*

*Anthyllis montana*

*Castanea sativa*

*Epipactis atrorubens*

*A. vulneraria*

*Centaurea affinis*

*E. microphylla*

*Arabis turrata*

*C. splendens*

*Erythronium dens-canis*

*Aremonia agrimonoides*

*Cirsium creticum*

*Euonymus latifolius*

*Aristolochia clematidis*

*Convallaria majalis*

*Filago arvensis*

*A. pallida*

*Convolvulus cantabrica*

*F. minima*

*Artemisia camphorata*

*Coronilla coronata*

*Fumaria petteri* subsp.

*Asperula cynanchica*

*Corydalis cava*

*thuretii*

*A. taurina*

*C. solida*

*Galium pedemontanum*

*Berberis vulgaris*

*Cotoneaster tomentosa*

*Genista pilosa*

|                                 |                              |                              |
|---------------------------------|------------------------------|------------------------------|
| <i>Helianthemum lasiocarpum</i> | <i>Malva moschata</i>        | <i>Psilurus aristatus</i>    |
| <i>Herniaria hirsuta</i>        | <i>Medicago prostrata</i>    | <i>Quercus pubescens</i>     |
| <i>H. incana</i>                | <i>M. rigidula</i>           | <i>Q. trojana</i>            |
| <i>Inula conyza</i>             | <i>Moenchia mantica</i>      | <i>Ranunculus fontanus</i>   |
| <i>I. graveolens</i>            | <i>Muscari botryoides</i>    | <i>R. thora</i>              |
| <i>Koeleria splendens</i>       | <i>Narcissus poeticus</i>    | <i>R. velutinus</i>          |
| <i>Lathyrus nissolia</i>        | <i>Neottia nidus-avis</i>    | <i>Roemeria hybrida</i>      |
| <i>Lembotropis nigricans</i>    | <i>Nigella arvensis</i>      | <i>Rumex scutatus</i>        |
| <i>Leontodon crispus</i>        | <i>Nigritella nigra</i>      | <i>Senecio erraticus</i>     |
| <i>Leucojum aestivum</i>        | <i>Orchis papilionacea</i>   | <i>Traunsteinera globosa</i> |
| <i>Leucorchis albida</i>        | <i>O. purpurea</i>           | <i>Trifolium glomeratum</i>  |
| <i>Lunaria annua</i>            | <i>O. tridentata</i>         | <i>T. hirtum</i>             |
| <i>L. rediviva</i>              | <i>O. ustulata</i>           | <i>T. leucanthum</i>         |
| <i>Luzula campestris</i>        | <i>Papaver dubium</i>        | <i>T. nigrescens</i>         |
| <i>L. luzulina</i>              | <i>P. rhoeas</i>             | <i>T. striatum</i>           |
| <i>L. pilosa</i>                | <i>Petrorhagia saxifraga</i> | <i>Viola alba</i>            |
| <i>L. spicata</i>               | <i>Pinus nigra</i>           | <i>V. odorata</i>            |
| <i>L. sudetica</i>              | <i>Platanthera bifolia</i>   | <i>Xeranthemum annuum</i>    |
| <i>L. sylvatica</i>             | <i>Polygonatum odoratum</i>  | <i>Ziziphora capitata</i>    |
| <i>Lychnis coronaria</i>        |                              |                              |

#### **B. Eastern Submediterranean plants**

These plants grow in the Submediterranean regions of the Balkan and Apennine peninsulas and in Asia Minor.

|                        |                            |                             |
|------------------------|----------------------------|-----------------------------|
| <i>Alyssum repens</i>  | <i>Galium flavescens</i>   | <i>Petrorhagia illyrica</i> |
| <i>Berteroa incana</i> | <i>Goniolimon serbicum</i> | <i>Queria hispanica</i>     |
| <i>Coronilla varia</i> | <i>Lathyrus latifolius</i> |                             |

#### **C. Submediterranean-Atlantic-Subatlantic plants**

These plants spread from the Submediterranean into the Atlantic region:

|                             |                              |                           |
|-----------------------------|------------------------------|---------------------------|
| <i>Aegilops triaristata</i> | <i>Polystichum setiferum</i> | <i>Taxus baccata</i>      |
| <i>Centaurea calcitrapa</i> | <i>Ranunculus flammula</i>   | <i>Trifolium strictum</i> |
| <i>Cynosurus echinatus</i>  | <i>Ribes alpinum</i>         | <i>T. subterraneum</i>    |
| <i>Lathyrus montanus</i>    | <i>R. grossularia</i>        |                           |

#### **D. Submediterranean-Pannonian plants**

To this group belong plants that spread from the Submediterranean into the Pannonian region:

*Genista tinctoria*

#### **E. Central-Submediterranean plants**

*Cytisus hirsutus*                      *Ornithogalum comosum*

**F. Central-W.-Submediterranean plants***Arabis muralis**Asphodelus albus**Vicia villosa***3. Illyric floristic element**

This element includes many species encountered in the western part of the Balkan peninsula, but having a wider range in the Balkans. They are the remains of an old Tertiary flora, with many Balkan endemics.

**A. Widespread Illyric plants:***Achillea abrotanoides**Crepis albanica**Potentilla glandulifera**Bromus fibrosus**Crepis columnae**Scrophularia laciniata**Cardaminopsis arenosa**C. dinarica**Senecio bosniacus**C. halleri* subsp. *ovirensis**Helleborus multifidus***B. Illyric plants of S. Europe:***Asphodeline liburnica**Fraxinus ornus**S. tenuifolia**Bupleurum veronense**Scorzonera villosa**Thlaspi praecox**Carpinus orientalis**Sesleria autumnalis**Trifolium dalmaticum**Crataegus monogyna***C. Illyric-Adriatic plants:***Carduus nutans**Drypis spinosa**Onosma javorkae**Centaurea jacea* subsp.*Edraianthus tenuifolius**Plantago holosteum**angustifolia**Iris illyrica**Potentilla australis**Daucus carota**Luzula nemorosa***D. Illyric-Apenninic plants:***Bromus erectus**Ruta graveolens**Thymus longicaulis**Rubus ulmifolius***E. Subillyric plants:***Achillea clavinae**Asperula scutellaris**Senecio lanatus**A. tanacetifolia**Scorzonera rosea***F. Other Illyric plants:***Aquilegia blavii*

– (East-Illyric)

*A. bleicii*

– (East-Illyric)

*Arabis procumbens*

– (Illyric-Dacian)

*Coronilla vaginalis*

– (Illyric-S. Alpic)

*Crocus heuffelianus*

– (East Illyric- Carpatho-Sudetic)

*Cytisus procumbens*

– (Illyric-Pannonian-S. Carpathian)

|                            |                                                 |
|----------------------------|-------------------------------------------------|
| <i>Draba lasiocarpa</i>    | – (Illyric-S.E. Albanian-W. Carpatho-Pannonian) |
| <i>Luzula luzuloides</i>   | – (Illyric-Balkanica)                           |
| <i>Onosma visianii</i>     | – (Illyric-Pannonian)                           |
| <i>Ranunculus crenatus</i> | – (Illyric-Dacian-Nordic)                       |
| <i>R. montenegrinus</i>    | – (E. Illyric-N. Scardo-Pindic)                 |
| <i>Thlaspi kovatsii</i>    | – (E. Illyric-Balkanica)                        |

## Conclusion

According to the present analysis, of a total of 1360 species of the Kosovo flora (Rexhepi 1986) 72 belong to the Mediterranean floristic element, 129 to the Submediterranean, and 51 to the Illyric element.

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