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ANALYSIS OF GANJA RIVER BASIN ACCORDING TO GEOGRAPHICAL ELEMENTS

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АНАЛИЗ БАССЕЙНА РЕКИ ГЯНДЖА ПО ГЕОГРАФИЧЕСКИМ ЭЛЕМЕНТАМ

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Abstract. The article provides an analysis of the Ganja River basin according to geographical elements. 8 geographical elements Caucasian, Holarctic, Arid or xerocontinental, Pluregional Boreal, Mediterranean, Palearctic and Iran-Turanian geographical elements were defined for the research area. Each geographical element was made on the basis of botanical geographical (floristic) regionalization.

Аннотация. В статье представлен анализ бассейна реки Гянджа по географическим элементам. Для территории исследований выделены 8 географических элементов: кавказский, голарктический, аридный или ксероконтинентальный, полирегиональный, бореальный, средиземноморский, полярный и ирано-туранский географические элементы. Каждый географический элемент создавался на основе ботанико-географического (флористического) районирования.

Keywords: geographical spectrum, geographical distribution, alpine vegetation.

Ключевые слова: географический спектр, географическое распределение, альпийская растительность.

Grouping species into geographical elements is an integral part of flora analysis. Species are separated according to their distribution similar to geographical elements. Analysis of geographical elements allows determining the origin of areas, their formation, migration path and historical development path. Among researchers, there is no unified opinion on the separation and classification of geographical elements. Geographical elements are defined based on the modern range of the species. The analysis of geographical elements was carried out according to the methods of (Grosheim, Tormachev, 1974) by many researchers. The classification of the range of Caucasian species was carried out by A. A. Grosheim (1936) [3, 5, 7].

The division of Caucasian flora into geographical elements was carried out on the basis of botanical geographical (floristic) regionalization [5, 6].

N. N Porteiner (1993-2000) made the basis of the classification scheme of geographical elements of the Ganja River basin. The division of the vegetation of the Ganja River basin into geographical elements is given in Table.

Caucasus element: This geographical element mainly covers the areas of the Caucasus province, and many of them can be spread in neighboring provinces.

The spectrum of geographical elements shows that the main part of the flora of the Ganja River basin is covered by Caucasian species. Caucasian elements in the study area include

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370 species. The analysis shows that most Caucasian species are found in rocks and outcrops. Species found on rocks and outcrops include *Cirsium tomentosum* (C. A. Mey.), *Ephedra procera* (Fisch. et C. A. Mey.), *Silene compacta* (Fisch. ex Hornem.), *Tragus racemosus* (L.) All., *Phleum alpinum* L., *Alopecurus laguroides* Balansa, *Sesleria phleoides* Steven ex Roem. et Schult., *Allium albidum* (Fisch. ex M. Bieb.)., *Celtis caucasica* Willd., *Parietaria micrantha* Ledeb., *Rumex acetosella* L., *Stellaria media* (L.) Vill., *Minuartia oreina* (Mattf.) Schischk., *Minuartia circassica* (Albov) Woronow, *Scleranthus uncinatus* Schur, *Gypsophila tenuifolia* M. Bieb., *Nigella orientalis* L., *Anemone fasciculata* L., *A. speciosa* Adams ex Pritz., *Ranunculus oreophilus* M. Bieb., *Thalictrum foetidum* L., *Papaver fugax* Poir. — etc. are attributed. A certain number of elements included in the Caucasus geographical element are considered forest educators. Here includes *Pinus hamata* etc. Hydrophytes are a minority [1].

Table

A SPECTRUM OF GEOGRAPHIC ELEMENTS

Geographical elements	*Amount of species*	*In % of the total number*
Caucasus	370	50,4
Arid or xerocontinental	140	19
Pluregional	60	8,2
Boreal	56	7,7
Mediterranean	39	5,3
Palearctic	29	4
Holarctic	22	3
Iran-Turan	18	2,4

The analysis of the distribution of Caucasian species shows that these species are widespread mainly in the subalpine zone. Some Caucasian species are not genetically homogeneous. Western Caucasian species are distributed in the alpine zone, Eastern Caucasian species are distributed in mountainous xerophytes, and the remaining species are equally distributed in the alpine and subalpine zone. Most Caucasian species are found in 2-3 zones, and stenotic species are found in only one zone. The analysis of the Caucasian geographical element shows that they play a leading role in the formation of the flora of the Ganja River basin and participate in the formation of plant groups [2].

Holarctic element: This element mainly includes species whose natural range covers the 3 hemispheres Holarctic and the eastern hemisphere. Holarctic species in the Ganja River basin are of arctomontane origin. Most of them are of rock and sedimentary origin. Most Holarctic species are found in 2-3 zones. The remaining species are distributed only in one zone. *Anchonium elichrysifolium* (DC.) Boiss., *Prometheum pilosum* (M. Bieb.) H. Ohba, *Saxifraga moschata* Wulfen, *S. exarata* Vill., *Saxifraga adenophora* K. Koch, *Sorbus caucasica* Zinserl., *Astragalus aureus* Willd. and so, on species are found in 2-3 zones. Species distributed in a belt include *Astragalus mollis* Bieb., *A. caucasicus* Pall., *Euphorbia macroceras* Fisch. et C. A. Mey., *Rhamnus* ×*spathulifolia* Fisch. et C. A. Mey., *Hippophae rhamnoides* L. — etc. are attributed.

Mediterranean element: The range of species included in the Mediterranean element is related to 2 or more provinces, sometimes it can enter the Crimea and the Caucasus. This element does not play a significant role in the formation of the flora of the Ganja River basin. It is found mainly in mountain xerophytes, forest and subalpine zone. These include *Pyrola media* Sw., *Pyrola minor* L., *Asyneuma campanuloides* (M. Bieb. ex Sims) Bornm., *Orthilia secunda* (L.) House., *Vaccinium myrtillus* L., *Primula macrocalyx* Bunge, *Centaurium erythraea* Rafn, *Gentiana septemfida* Pall.,

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G. gelida M. Bieb., *Vincetoxicum scandens* Sommier et Levier — etc. species are attributed.

Pluregional element: Species that are widespread in 2 or more worlds are included in this element. 60 species belong to this element. Of them, 35 species are found in rocks and outcrops, 16 species are found in anthropogenically disturbed areas, and a small amount is found in wetlands. Distribution by zones shows that most of them are settled in lower zones. *Betonica macrantha* C. Koch., *Milium effusum* L., *Bromopsis tomentella* (Boiss.) Holub and so on.

Boreal element: Species whose range is mainly in northern coniferous forests are included in the boreal element. In the understanding of this element, based on the ideas of H. Tras (1970), this element includes the species distributed in the coniferous forest zones of Holarctic, the centers of distribution. At the same time, the species distributed in the cold temperate regions of the southern hemisphere are included in the notoboreal elements.

A. A. Grossheim (1936) writes: Boreal elements are similar to the blanket that covers most regions of the Caucasus. According to their adaptation, they are divided into forest, meadow, swamp, rock and slough. Boreal species are distributed in alpine and subalpine zones and forests. It is rarely observed in mountain xerophytes. Most boreal species are undoubtedly relicts of the Pleistocene Ice Age. *Linum hypericifolium* Salisb., *Polygala alpicola* Rupr., *Plantago saxatilis* M. Bieb., *Picris hieracioides* L., *Dryopteris caucasica* (A. Braun) Fraser-Jenk. et Corley, *Glyceria notata* Chevall., *Hordeum leporinum* Link etc.

Palearctic element: This element refers to the 3 hemispheres of the Holarctic (Holarctic, ancient Mediterranean, eastern Asia). This element includes 29 species in the study area. Here mainly *Erodium cicutarium, Malva neglecta, Malva sylvestris,* etc. such as weedy ruderal plants, but also *Carex caucasica, Carex cuspidata, Festuca supina, Poa meyeri, Trifolium pratense, Polygonum alpestre,* etc. grass species such as, *Aetheopappus caucasicus, Potentilla argentea, Potentilla obscura,* etc. including rock- outcrop species. Most polar arctic species inhabit mountain xerophytes. It is also observed in forest, subalpine and alpine zones. Most palearctic species are distributed in 2-3 zones (*Malva neglecta, Polygonum alpestre, Bunias orientalis,* etc.). *Potentilla argentea* etc. species are species distributed in a belt [3, 4].

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