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RAVINES FLORISTIC DIVERSITY OF KHINNA GORGE (ZAYAMCHAY RIVER BASIN, LESSER CAUCASUS)

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ФЛОРИСТИЧЕСКОЕ РАЗНООБРАЗИЕ ОВРАГОВ УЩЕЛЬЯ ХИННА (БАССЕЙН Р. ЗАЯМЧАЙ, МАЛЫЙ КАВКАЗ)

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Abstract. In 2016–2021 the ravines floristic diversity of the Khinna gorge (Zayamchay river basin, Lesser Caucasus) was studied. Khinna gorge is located on the right bank of the Zayamchay river, at the foot of Gizilja Mount. In the ravines of the Khinna gorge, 18 species, 13 genera and 11 families of plants were found. Plants of relict origin were also found: *Poa nemoralis* L., *Poa compressa* L., *Ulmus glabra* Huds., *Parietaria chersonensis* (Lang & Szov.) Dörf., *Asparagus verticillatus* L., *Gladiolus atroviolaceus* Boiss., *Rubus buschii* Grossh. ex Sinkova, *Amoria tumens* (Steven ex M. Bieb.) Roskov, *Plantago major* L.

Аннотация. В 2016–2021 гг. изучалось биоразнообразие флоры оврагов ущелья Хинна (бассейн р. Заямчай, Малый Кавказ). Ущелье Хинна расположено на правом берегу р. Заямчай, у подножия горы Гызылджа. В оврагах ущелья Хинна обнаружено 18 видов, 13 родов и 11 семейств растений. Также обнаружены растения реликтового происхождения: *Poa nemoralis* L., *Poa compressa* L., *Ulmus glabra* Huds., *Parietaria chersonensis* (Lang & Szov.) Dörf., *Asparagus verticillatus* L., *Gladiolus atroviolaceus* Boiss., *Rubus buschii* Grossh. ex Sinkova, *Amoria tumens* (Steven ex M. Bieb.) Roskov, *Plantago major* L.

Keywords: ravines, gorge, flora, vegetation, family, genus, species.

Ключевые слова: овраги, ущелье, флора, растительность, семейство, род, вид.

The ravine is a narrow, blunt, sloping, young linear relief form. Ravines are formed as a result of the breaking of plants on the banks of rivers during the rainy season and snowmelt. There are 3 stages in the formation of ravines. First of all, small gorges are formed, in the next stage, the water flow gradually deepens the formed ravines [3-5]. At this stage, the process of ravine formation is accelerated.

Materials and methodology

The object of the research was the vegetation of the ravines of the Khinna gorge. The research material was the flora biodiversity of river basins. Phytocenological descriptions were made within the boundaries of natural vegetation groupings. With the help of the TURBOVEG program, a geobotanical and phytocenological description bank was created and worked on the basis of the MEGATAB program. An abundance of species Braun-Blanquet (1964) names of species Flora of Azerbaijan (1950-1961), Abstract of Caucasus flora [1-4], Gurbanov [1], Novruzov [3, 5].

To determine the status of rare and endangered species, the Red Data Book IUCN [2] was used. The plants are named after the books “Flora of Azerbaijan” (1950–1961) and “Abstract of Caucasus flora” (2003–2012), “The plant World of Azerbaijan” [3].

General methods accepted in botany, as well as ecological-geographical-morphological, areological, geographical-systematic, statistical-floristic methods were used in the development and determination of materials. Chamber research was conducted at the Department of Botany of Ganja State University.

As the ravine deepens, a step is formed first. When the snow melts and it rains, the base of these steps is washed away, gradually collapsing to form a ravine. Until then, the length of the ravine increases so that its height reaches the watershed. Gradually, the ravines collect water from all slopes and the size and depth of the basin end. Soft sediments accumulate at depth. In general, the formation of ravines is characteristic of humid conditions, in dry conditions ravines do not deepen for a long time.

Developed ravines gradually turn into the gorge, creating conditions for the cultivation of pastures, gardens, and other agricultural crops. The ravines cause great damage to the country's economy. The ravines in the study area are mostly observed in areas with steppe and mountain xerophytic vegetation. Atmospheric sediments are unevenly distributed in these areas, and in general, there must be viscous rocks for a ravine to forming clay, soil, rising wavy relief (Figure 1).



Figure 1. The ravines in the study area

The ravines cause great damage to the region's economy, destroy large areas of land, and only after 400–500 years the soil is formed on the slopes of the ravines. The ravines located on roadside, gas pipelines and banks of rivers are more dangerous. A ravine is a negative form of relief, forming a V profile. The depth and width of ravines can vary up to several meters. The ravine is formed as a result of precipitation, water washing, erosion, and on the slopes, there are bushes and other grasses. It can vary from 2 to 100 per year.

The formation of the ravine is a relief, soil washing, vegetation, and human economic activity. Up to 75% of the study area is steppe and mountain xerophytic vegetation of anthropogenic origin.

Currently, the process of ravine formation is very strong.

Khinna gorge ravines cover the right bank of the Zayamchay valley. Its upper part is reminiscent of mountain valleys. In fact, the Khinna gorge is a huge mountain valley with an area of 50-60 km, the formation of which is complicated. The high mountainous parts of the basin are surrounded by Paleozoic and Mesozoic sediments. Erosion processes are typical for the formation of ravines. Khinna gorges have tectonic origins. The sloping slopes of the ravines are surrounded by bare limestone. The northern and southern slopes of the ravines differ sharply in their fluorescent composition [1, 2].

Relict species are found on the southern slopes of anthropogenic ravines. Relict species include *Poa nemoralis* L., *Poa compressa* L., *Ulmus glabra* Huds., *Parietaria chersonensis* (Lang & Szov.) Dörf., *Asparagus verticillatus* L., *Gladiolus atrovioleaceus* Boiss., *Rubus buschii* Grossh. ex Sinkova, *Amora tumens*, *Plantago major* L.

In higher plants *Geranium collinum* Stephan ex Willd. Steph forms a microgroup with *Anomodon longifolius* Hedw. Hartm., *Grimmia doniana* Sm., *Bryum capillare* Hedw, *Polytrichum jommune* Hedw. moss species on tree stump (Figure 2).



Figure 2. Microgroup with mosses

On the northern slopes, mesophyte grasses, hornbeam, beech, linden, ash, mountain, mixed forests are typical for the Khinna gorge ravines. The following table provides information on the biodiversity of the flora of the Khinna gorge ravines (Table).

Table.

FLORA BIODIVERSITY OF KHINNA GORGE RAVINES

Family	Genus	Species
Aspidiaceae Mett. ex Frank	<i>Polystichum</i> Roth	<i>Polystichum lonchitis</i> (L.) Roth
Poaceae Barnhart	<i>Poa</i> L.	<i>Poa nemoralis</i> L. <i>Poa compressa</i> L.
Rosaceae Juss.	<i>Rubus</i> L.	<i>Rubus saxatilis</i> L.
Ranunculaceae Juss.	<i>Thalictrum</i> L.	<i>Thalictrum minus</i> L.
Euphorbiaceae Juss.	<i>Euphorbia</i> L.	<i>Euphorbia hyrcana</i> Grossh.
Rhamnaceae Juss.	<i>Rhamnus</i> L.	<i>Rhamnus pallasii</i> Fisch.et. C. A. Mey
Celtidaceae Link	<i>Celtis</i> L.	<i>Celtis australes</i> L.
Rubiaceae Juss.	<i>Galium</i> L.	<i>Galium caspicum</i> Stev.
Fabaceae Lindl.	<i>Trigonella</i> L.	<i>Trigonella strangulata</i> Boiss.
	<i>Amora</i> C. Presl.	<i>Amora tumens</i> Stev.ex Bieb.
	<i>Astragalus</i> L.	<i>Astragalus macrourus</i> Fisch. et Mey <i>Astragalus glycyphylloides</i> DC. <i>Astragalus finitimus</i> Bunge <i>Astragalus captiosus</i> Borris.
Cornaceae Dumort.	<i>Swida</i> Opiz	<i>Swida australis</i> (C. A. Mey) Pojark. ex Grossh.
Campanulaceae Juss.	<i>Campanula</i> L.	<i>Campanula coriacea</i> P. H. Davis <i>Campanula mensteriana</i> Grossh.

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