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CURRENT STATUS OF RARE SPECIES ON MOUNT GARAGUSH OF THE NAKHCHIVAN AUTONOMOUS REPUBLIC

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СОВРЕМЕННОЕ СОСТОЯНИЕ РЕДКИХ ВИДОВ НА ГОРЕ ГАРАГУШ НАХЧЫВАНСКОЙ АВТОНОМНОЙ РЕСПУБЛИКИ

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Abstract. The study area covers the territory of the Garagush Mountain of the Nakhchivan Autonomous Republic. The Garagush Mountain system (2600.5 m), one of the highest peaks of the Daralayaz range, has an absolute height of 1200–2600 m and is located between the upper reaches of the Qabaglichay River and the village of Chalkhangala, south of the Kechaltapa Mountain. The Billavachay and Lizbirtchay rivers pass through the area. Studies have been conducted to study the biodiversity of the flora and vegetation of this area, collect materials, identify and protect rare species. Critically Endangered species have been identified in the study area, and appropriate conservation measures, proposals and recommendations have been developed.

Аннотация. Район исследования охватывает территорию горы Гарагуш Нахчыванской Автономной Республики. Горная система Гарагуш (2600,5 м) является одной из самых высоких вершин хребта Даралаяз, имеет абсолютную высоту 1200–2600 м и расположена между верховьями реки Кабагличай и селом Чалхангала, к югу от горы Кечалтепа. Через район протекают реки Биллавачай и Лизбиртчай. Проведены исследования по изучению биоразнообразия флоры и растительности этой территории, сбору материалов, выявлению и охране редких видов. На исследуемой территории выявлены виды, находящиеся под угрозой исчезновения, и разработаны соответствующие меры по их охране, предложения и рекомендации.

Keywords: rare species, mountain species, vegetation, flora, Azerbaijan.

Ключевые слова: редкие виды, горные виды, растительность, флора, Азербайджан.

The research area covers the territory of the Garagush Mountain of the Nakhchivan Autonomous Republic. The Garagush Mountain (2600.5 m), one of the highest peaks of the Daralayaz range, has an absolute altitude of 1200–2600 m and is located between the upper reaches of the Qabaglichay River and the village of Chalkhangala, south of the Kecheltapa Mountain. The Billavachay and Lizbirtchay rivers pass through the area. Studies have been conducted to study the biodiversity of the flora and vegetation of this area, collect materials, identify and protect rare species. For this purpose, expeditions have been made along the route.

Continuing from the semi-stationary, geobotanical notes were taken on the species composition and structure of phytocenoses, and photographs of individual rare species and formations were taken [1].

Material and Methods.

During the research, classical and modern botanical-floristic, systematic, ecological, areological, phytocenological, plant resources and statistical methods were used.

The conservation status of rare species was given according to the IUCN “Red List” categories, “Red list of The Endemic Plants of the Caucasus. Armenia, Azerbaijan, Georgia, Iran, Russia, and Turkey” [23, 24].

The life forms of plants were given by I.G. Serebryakov and C.R. Raunkier, ecological groups by B.B. Alëkhin, A.R. Shennikov, types, classes and groups of the area by A.A. Grossheim and N.N. Portenier, endemism was classified according to “Flora of Azerbaijan” and separate research works [9–16].

During the research, the bioecological characteristics and vegetation types of those plant species distributed in the reserves and National Park, plant formations and associations in various zones, rare, endangered species were studied and new ranges of species in the territories were determined.

Result and discussion

22 species belonging to Pinopsida-Conifers were recorded in the territory of the Nakhchivan Autonomous Republic, of which 5 species are found in the wild flora. Of these species, only 3 species belonging to the genus *Juniperus* L. — Juniper were discovered in the territory of Mount Garagush. These species are as follows:

Phylum: Pinophyta

Classis: Pinopsida

Ordo: Cupressales

Familia: Cupressaceae S.F. Gray

Subfam.: Juniperideae C.Koch

Genus: *Juniperus* L.

Section.1. *Juniperus* = *Oxycedrus*

1(1). *Juniperus communis* L.

2(2). *J. foetidissima* Willd.

3(3). *J. sabina* L.

Here, *Juniperus foetidissima* Willd. is *Critically Endangered* R A4acd (Figure).



Figure. *Juniperus foetidissima* Willd.

The class Liliopsida (Monocotyledones, Monocotyledoneae) comprises approximately 25% of the flowering plants, comprising 59,000 species in 60 families and 2,800 genera. The most numerous family is Orchidaceae, which is distinguished by its extremely complex, beautiful and unique flowers. The Orchidaceae family has 27,801 species in 899 genera. The second largest family in terms of species is the economically very important Poaceae Barnhart, with 11,554 species in 759 genera. Other large families include Cyperaceae Juss. (110 genera, 5,784 species), Araceae Juss. (Lemnaceae S.F. Gray) — Legumes (117 genera, 3368 species) and Arecaceae Bercht. & J. Presl — Palms (185 genera, 2522 species). According to A.M. Askerov [3–5], there are 956 species of monocots belonging to 214 genera in the Republic of Azerbaijan. In the territory of the Nakhchivan Autonomous Republic, 578 species belonging to 24 genera and 159 genera belong to the class Monocots [7, 8].

As a result of studies conducted in the territory of the Garagush Mountain, the taxonomic spectrum of the class Monocots has been determined.

Desert and semi-desert vegetation is observed in the form of a narrow strip from north to south along the left bank of the Araz River in the form of horizontal zonation in the form of local spots in the direction of the Ordubad region after the Araz River. It covers areas at altitudes of 600–1000 meters in the plains of Sadarak, Sharur, Boyukduz, Nakhchivan, Gulustan, Yayci, Daste and Ordubad. For the first time, E.M. Gurbanov [6] noted desert vegetation in the Araz-bound areas of the autonomous republic. Some of the semi-desert areas noted by L. I. Prilipko and V. C. Hajiyev were investigated by E.M. Gurbanov. Some typical desert elements were found at the foot of Mount Garagush, especially in the Gender and Sariaghil zones. Examples of these species include Amaranthaceae Juss., (Chenopodiaceae Vent.) — *Suaeda dendroides* Moq., *Halocnemum strobilaceum* (Pall.) Bieb. and *Seidlitzia florida* (Bieb.) Bunge species. However, it is possible to claim that desert vegetation is not fully formed, but rather that desert vegetation is a transition to semi-desert vegetation. In the Demiler, Gendere, Saryaagıl, Ramler and Lizbird valleys of the Garagush mountain, there are locally saline, ephemeral-galliant (colored soil), gammada (gypsum soil) and sandy areas. The latter sandy area is more noticeable in the Lizbird valley. The plants distributed in these areas include *Suaeda dendroides* (C.A. Mey.) Moq., *S. prostrata* Pall., *S. salsa* (L.) Pall., *Halocnemum strobilaceum* (Pall.) Bieb., *Salicornia europaea* L., *Leontice minor* Boiss., *Centaurea behen* L. [*Microlophus behen* (L.) Takht.; *Serratula behen* (L.) Lam.], *Poa bulbosa* L., *Tulipa biflora* Pall. (*T. polychroma* Stapf), *Fritillaria gibbosa* Boiss. [*Rhinopetalum gibbosum* (Boiss.) Losinsk. & Vved.], *Carthamus oxyacanthus* Bieb., *C. gypsicola* Iljin, *Cousinia daralaghezica* Takht. and others are found.

Here, mainly short-lived ephemeral and ephemeroid plants, perennial herbs, shrubs, semi-shrubs, bushes and subshrubs of saline life forms prevail. Cattle feed on these plants most of the year. In some zones (near Boyukduz), favorable desert and semi-desert soils are cleared of salts and included in the crop rotation (Agrophytocenosis), so their area is gradually decreasing.

The Liliaceae Juss. family is distinguished by its decorative plants. The species *Fritillaria gibbosa* Boiss. [*Rhinopetalum gibbosum* (Boiss.) Losinsk. & Vved.], which belongs to the *Fritillaria* L. genus, is listed in the Red Book of the Nakhchivan Autonomous Republic with the status of VU A2cd. This species was discovered in early spring in the territory of Gendera and Demilar. 3 species belonging to the *Tulipa* L. genus were discovered in the area, which are also rare plants: *Tulipa florenskyi* Woronow [VUA3cd; B1b (III, IV) c (II)], *T. julia* C. Koch [(VUA3cd; B1b (III, IV) c (II))] and *T. biflora* Pall. [(CR B2ab (II, III, V))] are included in the Red Book of the Nakhchivan Autonomous Republic with the statuses. These species are distributed in the subalpine meadows of the Garagush mountain at 1800–2000 m above sea level and around the Salakhan caves.

T. biflora Pall. is distributed in the Nakhchivan Autonomous Republic, in the Kur-Araz valley and in the Kur plain. In the foothills and mid-mountain belts of the Nakhchivan Autonomous Republic, it is found on dry grassy, clayey, gravelly and stony slopes at the foothills of the Garagush mountain, Duzdagh, Darydagh, and Arachig mountains. The Red Book of the Nakhchivan Autonomous Republic includes species whose natural condition is at a critical level or whose extinction is likely, as well as those whose future It is listed as Critically Endangered — CR B2ab (II, III, V) as a plant species whose populations are determined to be at risk of severe damage [7].

It is listed in the Red Book of Azerbaijan as Vulnerable — VU; A2c+3c as a species susceptible to extinction [2]. It is a bulbous plant with a thin and bare stem 7–17 cm high. The bulb is small, reaching a diameter of 1–1.5 cm, covered with a light-gray, leathery sheath, and soft hairy inside. It has two leaves that join the stem from below. The flower is solitary, rarely 2. The inflorescence is 1.5–2.5 cm long, the petals are the same, elliptical- oblong, pointed, pale purple or pale greenish-bluish on the outside, white or pale red on the inside, the base of the inner ones is densely ciliate, sometimes bearded. The stamens are shorter than the inflorescence, their stalk is yellow, 2–2.5 times longer than the stamens. The capsule is 1–1.5 cm long. It blooms in April, and its seeds ripen in May. It reproduces by seeds and bulbs. It is a geophyte ornamental plant. It is a xeromesophyte, and belongs to the Iranian geographical areal type.

The largest family of the monocot class, Poaceae Barnhart, is represented by 86 species in 53 genera. According to the literature data of the section, *Triticum araraticum* Jakubz. (CR A1c; B2ab (I, II); C2a (I)) belonging to the genus *Triticum* L., has the status, but we did not find it in the study area. It is cultivated in the Botanical Garden of the Institute of Bioresources of the Nakhchivan Branch of ANAS.

The species *Bromus tzvelevii* S.G. Mussajev belonging to the genus *Bromus* L. also has the status [CR A1c; B2ab (I, II); C2a (I)], but we did not find it in the study area. We can also attribute the same ideas to the species *Stipa issaevii* S.G. Mussajev & Sadychov (CR B1ac(I)) belonging to the genus *Stipa* L., which we listed based on the literature data, and *Stipa karjaginii* S.G. Mussajev & Sadychov [VU A2cd; B1b (II,III) c (II,III)] belonging to the status.

Wheat, a strategic crop, is considered a priority crop for any country in terms of ensuring food security at a time when the world population is constantly increasing, general urbanization processes are intensifying, and global climate changes are occurring. The above-mentioned factors have led to a doubling of the world population's demand for agricultural products in the last 30 years. As a result, wheat production in the world has exceeded 620 million tons in the last five years. These successes have occurred due to the achievements made in the field of wheat breeding. In the last 25 years, wheat production in the world has increased by 100 million tons due to new varieties created through breeding. According to literature data, *Triticum araraticum* Jakubz. and *Triticum durum* Desf. species existed in the wild in the study area. However, we did not encounter these species during our research. The list was included based on literature data.

The outstanding florist S.M. Musayev and I.A. Sadigov recorded for science the species *Stipa issaevii* S.G. Mussajev & Sadychov, *S. karjaginii* S.G. Mussajev & Sadychov, *Bromus tzvelevii* S.G. Mussajev in the research area during expeditions.

626 species belonging to 49 families and 351 genera belonging to the class Ikilepeli were recorded in the territory of Garagush Mountain. Of these taxa, the family Papaveraceae Juss. was represented by 12 species belonging to 5 genera. *Glaucium* Mill. *Glaucium elegans* Fisch. & C.A. Mey. [LR (a-CD)] belonging to the genus *Glaucium* was found near the old village of Billava and at the foot of Ardaghi (2230 m).

The family Cannabaceae Martinov, nom. cons. (Celtidaceae Link) is represented by 2 species belonging to 2 genera in the territory of Garagush Mountain. *Celtis caucasica* Willd. (Critically Endangered — CR A3c; C2a(I)) belonging to the genus *Celtis* L. is found in the Khanbulagi and Salakhan forests and thickets on the Garagush Mountain.

Table

<i>Familia</i>	<i>Genus</i>	<i>Species</i>
<i>Cupressaceae</i> S.F. Grey.	<i>Juniperus</i> L.	<i>J. foetidissima</i> (CR A4acd)
<i>Liliaceae</i> Juss.	<i>Tulipa</i> L.	<i>T. biflora</i> Pall. (CR B2ab(ii,iii,v))
<i>Poaceae</i> Barnhart	<i>Triticum</i> L.	<i>Triticum araraticum</i> (CR A1c; B2ab(i,ii); C2a(i))
	<i>Bromus</i> L.	<i>Bromus tzvelevii</i> (CR A1c; B2ab(i,ii); C2a(i))
	<i>Stipa</i> L.	<i>Stipa issaevii</i> (CR B1ac(i))
<i>Papaveraceae</i> Juss.	<i>Glaucium</i> Mill.	<i>Glaucium elegans</i> (LR [a- CD])
<i>Cannabaceae</i>	<i>Celtis</i> L.	<i>Celtis caucasica</i> (CR A3c; C2a(i))

The Critically Endangered species studied by me in the Garagush Mountain area are listed in the Table below. These species are included in the Red Books of Azerbaijan and the Nakhchivan Autonomous Republic.

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