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**REGULARITIES OF DISTRIBUTION OF FEED PLANTS  
IN THE VEGETATION OF GUNNUT-KAPYCHIK  
PHYSICAL-GEOGRAPHICAL REGION**

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**ЗАКОНОМЕРНОСТИ РАСПРЕДЕЛЕНИЯ КОРМОВЫХ РАСТЕНИЙ  
В РАСТИТЕЛЬНОСТИ ГУННАТ-КАПЫЧИКСКОГО  
ФИЗИКО-ГЕОГРАФИЧЕСКОГО РАЙОНА**

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*Abstract.* Feed plants are dynamically utilized by humans. This leads to a decreasing supply of feed plants. Also, considering that feed plants are eaten by animals, it can be observed that the decrease in the supply of these crops is inevitable. For this purpose, we studied the rare species of feed plants in the vegetation of Gunnut-Kapychik physiographic area where we conducted our research. The list of rare species distributed in the area is given by determining the distribution of feed plants in the area by altitudinal belts. Along with internationally recognized categories for determining the status of some important species, rare and endangered in nature, their relationship with the biome is also recorded. First of all, its past and present state in nature, its limiting factors are clarified and included in one of the relevant categories.

*Аннотация.* Кормовые растения активно используются человеком. Это приводит к уменьшению запасов кормовых растений. Учитывая, что кормовые растения еще поедаются животными, можно заметить, что сокращение запасов этих растений неизбежно. С целью оценки участия кормовых растений в растительности Гуннат-Капычикского физико-географического района было проведено изучение территории. Перечень видов приведен путем определения распределения кормовых растений на территории по высотным поясам. Наряду с общепризнанными категориями для определения статуса некоторых важных видов, редких и находящихся под угрозой исчезновения в природе, также определяется их связь с биомом. Прежде всего, выясняются и включаются в одну из соответствующих категорий его прошлое и настоящее состояние в природе, его лимитирующие факторы.

*Keywords:* area, rare species, xerophytes, highlands, population, feed plants.

*Ключевые слова:* ареал, редкие виды, ксерофиты, высокогорье, популяция, кормовые растения.

In the vegetation of the physical-geographical area of Gunnut-Kapychik we have established regularities of distribution of feed plants by altitude belts. Depending on altitude, some plants are found in several belts, but there are species whose population is found only in one belt. The following table shows the dynamics of distribution of main feed plants in the physical-geographical area of Gunnut-Kapychik by zones (Table 1). Above the zones of the region there are 5 in high mountain zone, 14 in middle mountain zone, 16 in subnival and nival, 22 in wetland, 27 in mountain xerophytic, 28 in pure forest vegetation, 35 in steppe areas, 38 in shrub and 93 in meadow type of feed plants.

Table 1

DISTRIBUTION OF MAIN NATURAL FORAGE PLANTS BY BELTS

№	Zones	Absolute altitude above sea level, m	Types of vegetation	Variety	
				Number	Percent
1.	Low mountain	1200-1500	Mountain steppes	46	25,41
2.	Middle Highland	1500-2000	Steppe, forest and shrubland	49	27,01
3.	Upper highland	2000-2500	Forest, shrub and meadow	66	36,46
4.	Subalpine	2500-3000	Meadows, subalpine meadows	93	51,38
5.	Alp	3000-3500	Alpine meadows and carpets	8	4,41
6.	Mountain tundra	3500-3800	Subnival and petrophile	8	4,41
7.	Nival	3800-3906	Nival and petrophile	16	8,82

The flora of the Nakhchivan Autonomous Republic, located in the unique region of the Caucasus, counts up to 2800 plant species, most of which are useful and widely used in various spheres of national economy. Among them, more than 300 species of fodder plants are of special importance. However, due to the constant exploitation of these plants by humans, the population dynamics in nature has decreased and some species are already close to the danger of extinction [1].

The purpose of the conducted research is to assess the current status of rare and endangered species of feed plants of Gunnut-Kapichik flora.

Sadarak, Sharur, Kengerli, Babek, Shahbuz, Julfa and Ordubad administrative districts of Gunnut-Kapichik region were checked during the years of the research. Rare and endangered fodder plants were taken as research objects. Seed samples of endangered species were submitted to the National GenBank (A DNA sequence database).

Recently, a number of measures have been implemented to protect the world's range-restricted species. These include the IUCN Council's Red List of Threatened Species — methods of categories and criteria have been compiled, and a clear classification system for species at high risk of extinction has been developed. IUCN version 3.1 was mainly used in assessing the status of plants during monitoring [3].

Since they widely use wild fodder plants, the threshold of their danger or destruction is higher. Taking this into account, the causes of thinning and disappearance of common plants in the territory of Nakhchivan MR have been assessed based on literature data and conducted studies according to the following criteria and sub-criteria:

Certain criteria of each category (A, B, C, D) are recorded. Criterion A was applied at 90% decline in the last 10 years or 3 generations of observation, and in this case sub-criteria except the category and criterion about severely threatened taxon were taken into account. In this case, the causes of the decline are known, and the cause of the decline can be addressed.

Criterion B is applied when the initial classification is not yet completely accurate or is considered incorrect. All assessments listed here should indicate whether there is a threat to

classification, whether the criterion is met, and whether the sub-criterion is met. At least one criterion should be noted in this case. If more than one criterion and sub-criterion are recorded, each criterion is listed. Once all of these are considered and recorded, the taxon can be accepted onto the IUCN Red List. Sometimes, because the criteria mentioned above are no longer met, the automaton is placed in a lower category of previous threat.

Criterion C was applied when a change in the previous threat status of a taxon was observed, or populations were re-evaluated for the same regional threat.

Criterion D was not met during the study. Criterion D should be applied when identifying any geographic situation or distinct groups where little demographic or genetic exchange or migration is observed.

I would like to note that to assess the current status of the most threatened plants on the territory of Nakhchivan Autonomous Republic the above was taken into account and conducted in full compliance with the legislation given by IUCN (Table 2).

Table 2

LIST OF RARE PLANTS OF THE GUNNUT-KAPYCHIK PHYSICAL-GEOGRAPHICAL REGION

№	Name of plants	IUCN Categories and Criteria
1.	<i>Bilacunaria microcarpa</i> (M. Bieb.) Pimenov & V. N. Tikhom. = <i>Cachrys microcarpa</i> M. Bieb.	EN A2ac+C1
2.	<i>Carum caucasicum</i> (M. Bieb.) Boiss.	VU/B1ab (II, III, IV)
3.	<i>Gundelia tournefortii</i> L.	LC
4.	<i>Bellevalia pycnantha</i> (K. Koch) Losinsk.	NT
5.	<i>Campanula latifolia</i> L.	VU C2a (I)
6.	<i>C. propinqua</i> Fisch. & C. A. Mey.	LR
7.	<i>C. coriacea</i> P. H. Davis	NT
8.	<i>C. karakuschensis</i> Grossh.	VUA2cd; B1b (I, V) c (III)
9.	<i>C. daralaghezica</i> (Grossh.) Kolak. & Serdyuk.	VU B1ab (II); C2a (I)
10.	<i>Crocus speciosus</i> M. Bieb.	VU B2bc (II, V)
11.	<i>Draba polytricha</i> Ledeb.	VU A1c
12.	<i>Viola tricolor</i> L.	LR
13.	<i>Gagea glacialis</i> K. Koch	LR
14.	<i>Heracleum albovii</i> Manden.	VU B1a (I) c (III); C2 (I)
15.	<i>Hypericum linarioides</i> Bosse	VU A1c; B1ac (II)
16.	<i>H. formosissimum</i> Takht.	VU A1c; B1ac (II)
17.	<i>Orchis mascula</i> (L.) L.	VU A2cd
18.	<i>Ornithogalum ponticum</i> Zahar.	LR
19.	<i>Pyrethrum komarovii</i> Sosn.	VUA2cd
20.	<i>P. kotschy</i> Boiss.	VU A3cd
21.	<i>Scorzonera grossheimii</i> Lipsch. & Vassil.	CR B1ac
22.	<i>S. latifolia</i> (Fisch. & C. A. Mey.) DC.	LR
23.	<i>Valeriana alliariifolia</i> Adams	VU A3bc
24.	<i>Urtica urens</i> L.	NT

As can be seen from the table, 24 species of feed plants are under threat in the flora of Gunnut-Kapychik. Considering that there are 182 species of wild vegetable plants in Gunnut-Kapychik flora, it can be concluded that 0.75 out of every 10 species are threatened. Some of them are presented below [9].

*Bilacunaria microcarpa* = *Cachrys microcarpa* — the last leaves are 1-2 (3) cm long, numerous, stalked. It is a naked plant with slightly soft hairs. Its stem is triangular, furrowed, branching at the top. The leaves around the stem are long-petiolate, oblong-ovate. The umbrellas have 7-12 rays. Binding and banding leaves are short, with pointed tips. Petals are yellow; Fruit is oblong, wine-shaped, the ribs on the mericarp are thick, dark, and have warty swellings on it. Flowering in May-June, fruiting in June-July. In some regions of Azerbaijan, it is found in middle and lower mountain belts, in dry, clayey, rubbly valleys. However, in the flora of Nakhchivan MR the population dynamics decreased, and it was distributed in a limited area. It is established that the species is on the verge of extinction in nature. In the last 10 years, there has been a 50% decline, which we directly observe, and at the same time the habitat quality has decreased as a result of anthropogenic factor (A2as). No more than 2500 plants were found in any of the ranges of the autonomous republic with a continuous decline of 20% over the last 5 years (C1).

Thus, the risk of extinction of the toxin in nature is considered to be high. The main limiting factor for the species is the mass and spontaneous harvesting of the plant for sale as a result of anthropogenic impacts. The plant is consumed fresh and salted like carrots and sold in markets. Studies have found 5-50 plants per km<sup>2</sup> in the distribution areas. 5-10 plants per km<sup>2</sup> within 3-5 km of residential areas, 10-25 plants per km<sup>2</sup> within 5-10 km and 25-50 plants per km<sup>2</sup> within 10 km radius. This indicates that the species is threatened. Small populations occur in Nove Asni (Karabagh), Kibla Spring-Ag-Gaya (Havus), Gainyuk-Piri, Ganz, Salvarti (Shahbuz) and Kara-Dera (Julfa) areas, near places of worship and belief. This is due to people's beliefs not to touch or use plants, animals, natural resources and other things in places of fire and hearth.

*Gundelia tournefortii* is a rare species belonging to the Aster family in the fore-Asian range. The variety is an almost naked or spidery plant with stem hairs and strong spines. Stems are erect, dense, simple or less often short, shield-like branched at the top, 20-70 cm tall. Leaves are large, 20-40 cm long and 6-8 cm wide, leathery, stiff, with a clearly visible network of thick veins. They appear oblong or oblong-lanceolate, pinnately cut, coarsely toothed, spiny and divided. The lower leaves are attached to the stems. Stem leaves are sessile, half covering the stem and slightly separated from the stem. The common inflorescence is oval-long, 2-4 cm wide, surrounded by 2-4 stout spiny lanceolate leaves, above the inflorescence. At the base of the basket the pedicels are leathery or lance-shaped, ending in a hard spike, longer than the flowers. The pods (together with the lip skin folds gathered around them) are large, about 6 mm long (not counting the spines at the apex), compressed tetrahedral, smooth. Flowering in May-June, fruiting in July-August. In the middle mountain belt of the d. d. s. Widespread at altitudes up to 1800 m. It grows on dry clay, stony slopes and glades.

It is distributed in Bilava, Tivi, Bist, Gainyuk, Shurut, Paradash, Kyzyl-Kishlak and other areas of the Autonomous Republic. Small populations of the species occur in these areas. It belongs to the category of low hazard limit (HL). According to the criteria, it does not fall into any of the above categories, but its populations are considered relatively threatened taxa. As a vegetable, young cabbage is peeled and used fresh. It reproduces naturally by seed. Thus, in July-August, pods explode, seeds are dispersed or withered plants are easily rolled down slopes by the wind because of their lightness. Thus, the seeds are scattered over the plot and germinate when favorable conditions occur. For the first time we were able to propagate by seeds in the Botanical Garden. The first spring normal sprouts were obtained from the seeds sown in the fall.

*Urtica urens* is a rare plant of the Urticaceae family, 80 cm tall, covered with stinging hairs, with a straight stem. Leaves are elliptic or oval-elliptic, sessile on long petioles, the base of the leaves is rounded wedge-shaped or rounded. The tip is acute, the margins surrounded by very dense stinging hairs, coarsely toothed. Leaves are small, green, free. Inflorescence is clustered, male and

female flowers together, leaf petioles short. The boll is 1-5 mm long. Flowering and fruiting lasts from May to October [2].

Endangered (NT) is a rare plant. The taxon is expected to face extinction in the near future, has also been absent from many of its former populations for several years, and may inhabit natural landscapes inaccessible to humans.

Bichenak, Khazinadara and very small settlements around Nakhchivan city were recorded. No wide populations of the species were found during the surveys. Its use as a food and valuable fodder plant has led to a decrease in its supply.

*Campanula karakuschensis* is a perennial xerophytic plant 5-10 cm tall. Rooted. The stem is bumpy. Leaves around the stem are numerous, branching, forming leaves and stems. Old leaves around the root cover the plant and form a bed. The trunk is spreading, arching, branching at the top. Rosette leaves are lanceolate or ovate, with sharp toothed or serrated edges. The color of the flowers is dark blue. Blooms in June and July, produces seeds in September. Collected as an ornamental plant. A dramatic reduction in the natural range of the plant has been noted. At the time of assessment this met the categories and criteria VUA2cd; B1b(I, V)c(III).

*Campanula karakuschensis* is distributed in Azerbaijan only in the middle mountain belt of the Nakhchivan Autonomous Republic. This species is found in the Karagush, Nohuddag, Daresham mountains and around the Gilanchay basin. It is described on the basis of materials collected from Karagush Mountain of Nakhchivan Autonomous Republic.

Visual populations inhabit areas of limited size, e. g. There are 4 populations of 20-25 individuals each at an altitude of 1800 m in Mount Karagush of Sharur district. Onions are harvested in masse. It is subject to zoogenic and anthropogenic impact.

Included in the Red Book of the former USSR and Nakhchivan Autonomous Republic. Measures have been taken to protect the territory of its distribution in the Arpachay and Arazboyu State Reserves.

It grows in small groups in limited areas. VU A2kd; B1b (III, V) c (III) is low risk, its level has decreased by 30% over the last 10 years. As it is an ornamental xerophytic plant, it is not possible to study its phytocoenological status in populations. Harvesting is rapid. Information on cultivation has been obtained. Reintroduction is required.

*Gagea glacialis* is a species of glacial onion found in Shakhbuz, Sharur, Ordubad and Julfa districts of Gunnut-Kapykik physical-geographical region, in subalpine and alpine belts, on lush grassy slopes at an altitude of 2400-3200m above sea level. It begins to bloom in mid-summer. In particular, it forms a small cenoses in Ordubad and Shahbuz districts. In the Kapychik, Salvarty and Soyug mountains, it rises from under snow in the VI-VII months of the year.

*Carum caucasicum* — Caucasian caraway. Bract leaves 1-3 pinnate, usually flat, rarely absent. Wrapper leaves 5-6 cm long, with a broad sheath, linear-lanceolate.

Leaves around the stem are long-petiolate, oblong, dissected, apical leaves lanceolate or linear, stem leaves 1-2 pieces or absent altogether. The umbrellas have 5 rays of different sizes. The petals are white. The fruits are 3 mm long. Flowering occurs in June, July, fruiting — in July, August. Above 2000 m above sea level, it is observed sporadically. It occurs mainly in alpine and subalpine meadows. It is a mesophytic plant [4].

It occurs in Gamigayev and Goygol districts of Ordubad district of Nakhchivan Autonomous Republic, in the foothills of Garagush district of Sharur district. The reason for their small number is the limiting influence of environmental factors. It is a small species distributed on a limited territory. According to the IUCN Red List criteria, it is included category VU/B1ab (II, III, IV). It is an important species that needs to be protected because its populations are relatively threatened [5-8].

Therefore, we consider it expedient to implement the following measures to protect rare and endangered species.

### Result

In the course of the conducted research, the dynamics of distribution of the main forage plants in the physical-geographical area of Gunnut-Kapychik was studied. It was found that in the upper highlands — 5, in the mid-mountain belts — 14, in subnival and nival belts — 16, in wetlands — 22, in mountain-xerophytic — 27, in purely forest vegetation — 28, in steppe areas — 35, in 38 — in shrubby, herbaceous vegetation 93 species of fodder plants were observed.

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