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GEOGRAPHICAL ANALYSIS OF BERBERIDACEAE FAMILY PLANTS FOUND ON THE TERRITORY OF NAKHCHIVAN AUTONOMOUS REPUBLIC

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ГЕОГРАФИЧЕСКИЙ АНАЛИЗ РАСТЕНИЙ СЕМЕЙСТВА Berberidaceae, РАСПРОСТРАНЕННЫХ НА ТЕРРИТОРИИ НАХЧЫВАНСКОЙ АВТОНОМНОЙ РЕСПУБЛИКИ

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Abstract. It becomes difficult to determine the first historical range of the plant, which moved far from its prehistoric territory. It has been controversial in this aspect to determine the historical geographical range of plants also included in the *Berberis* L. genus. Genera and species of Berberidaceae family in Nakhchivan AR migrated from the flora of the Caucasus, Central Asia, East Asia, Iran. The territory of Iran is dominant and represented by 4 species in this family. As a result of the analysis, it was found that plants belonging to the Berberidaceae family, found on the Territory of Nakhchivan Autonomous Republic which relate predominantly to xerophilic, Caucasian and boreal geographical types.

Аннотация. Трудно определить первый исторический ареал растения, удаленного от его исторической территории. Определение историко-географического ареала растений, входящих в род *Berberis* L., в этом отношении вызывает споры. Роды и виды семейства Berberidaceae из Нахчыванской АР мигрировали из флоры Кавказа, Средней Азии, Восточной Азии, Ирана и других близлежащих регионов территории. На территории Ирана это семейство является доминирующим и представлено 4 видами. В результате анализа установлено, что растения семейства Berberidaceae, распространенного в Нахчыванской Автономной Республике, относятся преимущественно к ксерофильному, кавказскому, бореальному географическим типам.

Keywords: *Berberis*, geographic range, Caucasus, flora.

Ключевые слова: барбарис, географический ареал, Кавказ, флора.

The geographical area of plants is the area where they first formed and spread. However, the majority of plants extend their areal and spread to other nearby places, where they thrive and multiply intensely, while certain plant species stay endemic and are unable to grow. Scientists have determined that the species included in this genus, distributed in secondary centers, have an ancient origin. Due to the geographical distribution of modern species and remains in the case of excavations, it is believed that species of the genus barberry appeared in the Cretaceous period of the Mesozoic era before the collapse of the mainland of Gondwana and spread in the lower tiers of Subtropical broadleaf forests as an ancient plant among the first terrestrial vegetation.

Plants belonging to the Berberidaceae family are mostly found in the world's northern hemisphere. The tropical mountain forests of India, as well as South and North America, particularly the Andes, are home to a large number of species belonging to the genus *Berberis* L., which makes up the majority of the family's species. However, the distribution of the majority of the species was found in East Asian regions. And the species of barberries distributed in the Caucasus are distinguished by their endemicity, adaptation to optimal living conditions. The vegetation cover of the Republic of Azerbaijan was also studied by researchers in different periods in the composition of the Caucasus and phytocoenological and geographical areal types were identified. When studying the flora of the Caucasus, N. I. Kuznetsov (1909) divided the territory into 19 provinces, A. A. Grossheim and D. I. Sosnovsky (1929) divided it into 10 provinces. In his book "Analysis of Caucasian flora" he divided the flora of this place into 7 geographical types [4].

In this book, A.A. Grossheim not only gave a botanical description of each species, but also noted the geographical areal type of these plants. In the table given by A. A. Grossheim (1936) to the geographical types of areal, he noted 7 types, 16 classes, 47 groups, 49 additional groups [1]. A. A. Grossheim included a total of 1148 species of plants in the flora of Nakhchivan AR.

At present, the geographical analysis of the flora of the Caucasus is increasingly frequently conducted using the N. N. Portenier approach. The idea of phytochorions is founded in N. N. Portenier's system, and Portenier demonstrates how the inclusion of phytochorions at the geographical level produces geographic features [9].

Materials and methods

Conducting areological analysis of plants of the Berberidaceae family, the works of A. A. Grossheim [5, 6], E. M. Gurbanov [7], N. N. Portenier [9], as well as such fundamental works as "Flora of Azerbaijan" [2], "Flora of the USSR" [3] were used, the geographical areal types of species were specified.

Plants belonging to almost all geographical types are found in the vegetation cover of Azerbaijan.

Research results

A. A. Grossheim showed the ancient (The third period) type of forest habitat in the Caucasian flora as developing in two centers different from each other, "Colchian" and "Hyrcanian". Species belonging to the genera *Jeffersonia* W. Bartram, *Podophyllum* L., *Diphylleia* Michx., *Achlys* DC. and *Nandina* Thunb., members of the Berberidaceae family of this period, are not found in nature in the Caucasus. However, one of the relict genera of this period of Hyrcanian origin, the *Epimedium* L. genus is wide found in Azerbaijan. In the Talysh Mountains, famous for their relict plants, *Epimedium pinnatum* — a species of ancient origin is found in the forests of Zuvand, as a rare plant. *Epimedium pinnatum* is considered a plant species endemic to the Caucasus zone, unable to grow in its range.

Ronald Goode was the first to identify the boreal type. Boreal woods that stretch from North America to Eurasia define this region. The vegetation in this region are nearly equivalent to those in Siberia, the largest state in Europe. Since the majority of the plants in the boreal type, also known as the Holarctic treasure, have extended from the south to the Caucasus, this type is known as circumboreal. The mountain ranges of the Greater and Lesser Caucasus include elements of the boreal type, whereas the lower zones have smaller amounts of these elements. Most species belonging to the Berberidaceae family belong to this type. This type includes elements of the Holarctic, Polar and European groups, which include light-loving, drought-resistant and cold-

resistant plants. A. A. Grossheim indicated the geographical range of *Berberis vulgaris* L. species as European [6].

The Bozgir type is characterized by plants of Iranian, Western Asian, South Russian and Turanian origin, some of Mediterranean origin. In our country, plants belonging to this type are found in the flat and foothill zones.

Xerophilous type — includes the Mediterranean, Western Asia, Central Asia and other range. The xerophilic type is also called the ancient Mediterranean type. Although most of the plants growing in this area are xerophytic plants, they also include mesophytic, hygrophytic, and hydrophytic plants. *Berberis densiflora* species belonging to Berberidaceae was assigned to this type by A. A. Grossheim [6].

Desert type — A. A. Grossheim attributed the Sahara-Iranian and Turanian elements to this type.

Iranian-Turanian geographical area — P. E. Boissier noted the existence of such an area type in his work “Flora orientalis”. This region includes parts of Turkey and Syria, Mesopotamia, Talysh forests, the Iranian side of the Caspian Sea, the northern part of the Himalayas, the south of the Volga River and so on. The great merit of the Russian botanist E. M. Lavrenko in the study of the flora of the Iranian-Turanian area [8].

This area includes the *Bongardia chrysogonum* *Bongardia* genus species and *Leontice minor* of *Leontice* genus belonging to the family Berberidaceae. *Leontice minor* is considered an endemic plant for the Nakhchivan Autonomous Republic.

The Caucasian and adventitious types include plants found in small quantities. This includes marsh plants, distributed mainly around the Kura-Araz lowland.

Conclusion

As a result of the analysis, it was found that plants belonging to the *Berberidaceae* family, distributed in the Nakhchivan Autonomous Republic, belong mainly to xerophilic, Caucasian, boreal geographical types. Geographical areal types of species within the chapter in the flora of the territory can be given on the basis of the following table (Table).

Table

GEOGRAPHICAL AREAL TYPE OF PLANTS IN THE Berberidaceae family

№	Species names	Area types included
1	<i>Berberis vulgaris</i>	Europe
2	<i>Berberis iberica</i>	Eastern Caucasus – Northern Iran
3	<i>Berberis densiflora</i>	Front Asia – Central Asia
4	<i>Berberis orientalis</i>	Iran
5	<i>Berberis integerrima</i>	East Asia – Central Asia
6	<i>Berberis heteropoda</i>	Central Asia
7	<i>Berberis turcomanica</i>	Central Asia
8	<i>Berberis thunbergii</i>	East Asia
9	<i>Leontice minor</i>	Atropatene
10	<i>Mahonia aquifolium</i>	Europe
11	<i>Nandina domestica</i>	East Asia

It was concluded from the provided table that the species belonging to the Berberidaceae family are included in the several categories of areal types provided by Grossheim. Among them, 1 species of Iran (9.09%), 2 species of East Asia (18.18%), 2 species of Europe (18.18%), 1 species of East Caucasus-North Iran (9.09%), 2 species of Central Asia (18.18%), 1 species of front Asia-

Central Asia (9.09%), 1 species of East Asia – Central Asia (9.09%), 1 species of Atropatene (9.09%) (Figure).

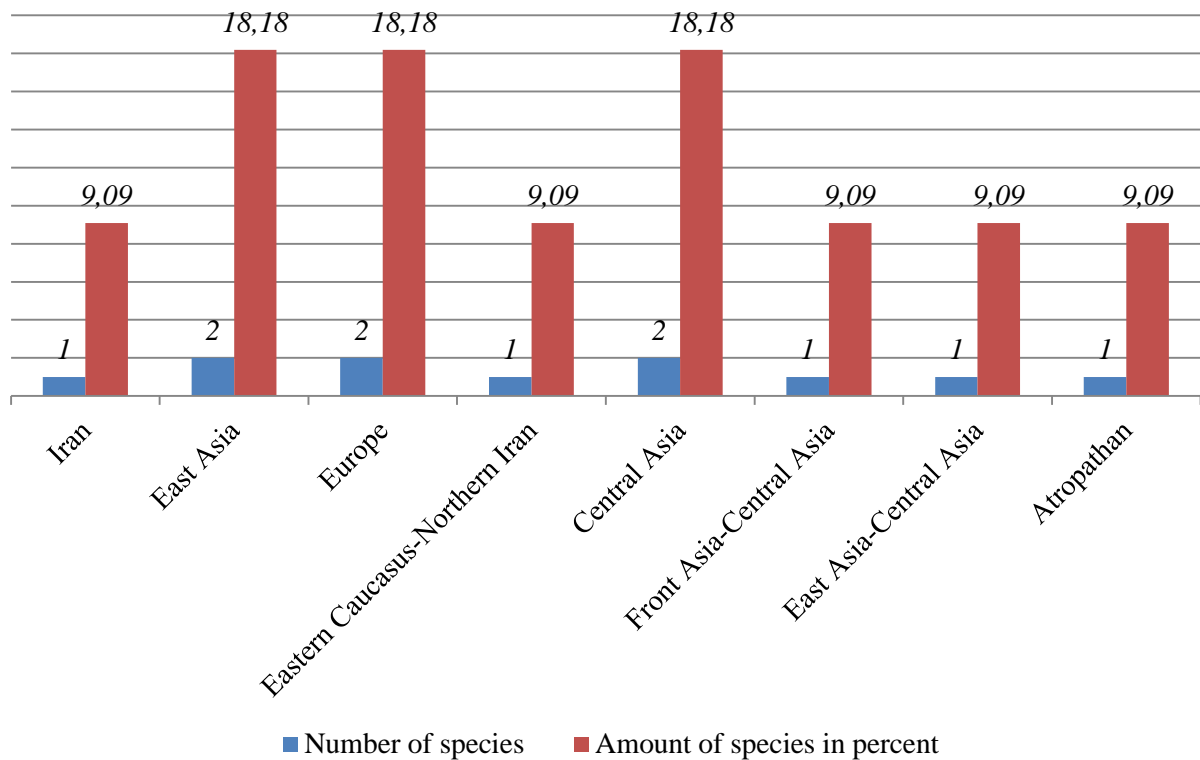


Figure. Berberidaceae distribution of species within the family according to the type of geographical area

When the plants belonging to the family Berberidaceae are studied according to their geographical area, it is known that the genera and species of this family in Nakhchivan AR migrated to the flora of the Caucasus, Central Asia, East Asia, Iran and other nearby areas or spread to the autonomous republic from those areas. If we look at the distribution of the plants of the Berberidaceae family according to geographical areal classes, we will see that the territory of Iran is more dominant and represented by 4 species in this family.

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