

Floristic Analysis of the Species concerning the *Astragalus* L. Type Spread in the Daridagh Area

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INTRODUCTION

Daridagh Ridge - is a low slope range in the Julfaregion and is located in the far southwest corner of the Damirlidagh-Goydagh arm that is south-west of the Zangazur range and its natural continuation on the earth's surface.

Starting from the Yayji Plain in the Southeast, it extends 16 km to the north, north-west to the left bank of Alinjachay. The highest peak is Daridagh (1927.4 m). Other tops of the range include the Pilalar (1562.6 m), Shahgarash (1430.6 m), Dikdash (1411.0 m) and Kasandagh (1102.1 m). The slopes are cracked severely and precipice.

The rich flora of Xerophytes of the Nakhchivan Autonomous Republic has developed in the close genetic relationship with the Mediterranean area, the Asia Minor and the Iranian flora. Variety of vegetation in the area has long been of great interest to researchers, botanists, nature scientists, phytochemists and paleobotanics. In different periods, there have been carried out various researches on different species, genus and families and there have been

included the new taxons (families, genus, species) into the flora, and they were satisfied to study and preserve the useful properties of some species.

In this respect, there has been planned to carry out researches, by the aim of studying the composition of the *Astragalus* genus species, including their vital forms, spreading on the altitude zones, botanical-geographical analysis, bioecological features, present situation of the rare and endangered species, as well as the ways of their effective usage and protection.

MATERIAL AND METHODOLOGY OF THE RESEARCH

The researches are started to be carried out in 2018. As a part of the research area, the Dardanik massif was selected, and as the object of the research the *Astragalus* genus has been selected. For defining the species there have been used the following works of the researchers: Черепанов С.К. Сосудистые растения России и сопредельных государств (в пределах бывшего СССР), (5), Гроссгейм А.А. Анализ флоры Кавказа.” (4), Т.Н. Talibov and Ə.Ş. İbrahimov “Taxonomic spectrum of the Nakhchivan Autonomous Republic flora” (3), А.Əsgərov “The plant world of Azerbaijan” (2), Qənbərov D.Ş “Florist analysis of *Astracantha* and *Astragalus* species spreaded in the flora of Nakhchivan Autonomous Republic” (1).

EXPERIMENTAL PART

One of the leading families in the vegetation cover of the Dardagh area is the *Astragalus* genus of the Leguminosae family. During the investigations in the Daridagh area, we met 14 species of *Astragalus* genus concerning to 10 section. The article provides a taxonomic analysis of species belonging to the

same genus, as well as the vital forms and botanical-geographical analysis.

Sect. 1. Susamine DC: 1. *A.asterias* Stev.ex Ledeb., 2. *A.tribuloides*

Sect. 2. Megalocystis Bunge: 3. *A. szovitsii* Fisch. & C.A. Mey.

Sect. 3. Onobrychoiei DC. (A. sect. Onobrychium Bunge): group 1. Onobrychici - 4. *A. cancellatus* Bunge, group 2. Adunci - 5. *A. conspicuus* Boriss, 6. *A.aduncus* Willd.

Sect. 4. Dissitivity DC. (A sect. Xiphidium Bunge): 7. *A.argyroides* G.Beck. ex Stapf

Sect. 5. Annulares DC. (A. sect. Harpilobus Bunge): 8. *A.corrugates* Bertol.

Sect. 6. Ankylotus Bunge: 9. *A.commixtus* Bunge.

Sect. 7. Myobroma Bunge: 10. *A. fabaceus* Bieb.

Sect. 8. The Inca Dc. (A. sect. Proselius Bunge): 11. *A.candolleanus* Boiss.

Sect. 9. Ornithopodium Bunge (A. secti Theiochrus): group 1. Ornithopodes - 12. *A.ochochus* Sosn, group 2. Shelkovnikoviani - 13. *A.schelkovinikovii* Grossh.

Sect. 10. Heterodontus: 14. *A.stevenianus* DC.

The species listed above are divided into 2 subspecies: *Astragalus* and *Cercidothrix*. Of these species, 5 (35.71%) belong to the *Astragalus* subspecies and 9 (64.29%) to the *Cercidothrix* subspecies.

Out of the sections *Sesamei* DC., *Megalocystis* Bunge, *Annulares* DC, *Ankylotus* Bunge, *Myobroma* Bunge are included into *Astragalus* subspecies, and

Onobrychoiei DC, *Dissitiflori* DC, *Incidental* Dc, *Ornithopodium* Bunge, and *Heterodontus* are included into the *Cercidothrix* subspecies.

As seen above the *Sesamei* DC section is represented in the *Astragalus* subgenus by 2species. The others are represented by 1 species, and *Onobrychoiei* DC in the

Cercidothrix subgenus is represented by 3 species. *Ornithopodium* Bunge is represented by 2 species, and other sections are represented by 1 species.

The vital form (biomorphic, rich form) is called an external view of plants (as expressed in them) resulting from adaptation to local conditions over a long period of time. The vital forms include trees, bushes, semi-bushes, herbs and so on. The plants that are not systematically close adapt to living conditions in the same environment as they form a general structure, and form the same vital shape. At the same time, if plants of one species develop in different ecological conditions, they may differ in form.

The analysis of the basic vital forms of the *Astragalus* genus, that spread in the Daridagh region, is based on 2 systems. The first system is the classification system of I.G. Serebryakov (6). In this system, the length of the plant life and its skeleton play a key role.

Table 1.
Distribution of species including into *Astragalus* Species, according to their vital forms, geographic areal types and classes

No	Species	Vital forms	Geographic areal classes	Geographic areal types
1	<i>A.corrugatus</i> Bertol.	Annual	Southern Iran-Turan	Xerofil
2	<i>A.tribuloides</i> Delile	Annual	Iran -Turan	Xerofil
3	<i>A.szovitsii</i> Fisch. & C.A. Mey.	Perennial	M.O	M.O
4	<i>A.cancellatus</i> Bunge	Perennial	Mediterranean sea Northern Iran	Xerofil
5	<i>A.kochianus</i> Sosn.	Perennial	Northern Iran	Xerofil
6	<i>A.schelkovinikovii</i> Grossh.	Perennial	Atropatan	Xerofil
7	<i>A.conspicuus</i> Boriss.	Perennial	M.O	M.O
8	<i>A.aduncus</i> Willd	Perennial	Front Asia	Xerofil
9	<i>A.asterias</i> Stev.ex Ledeb. (<i>A.criciatus</i> auct.non)	Perennial	Northern Iran	Xerofil
10	<i>A.argyroides</i> G. Beck ex Stapf	Perennial	Atropatan	Xerofil
11	<i>A.candolleanus</i> Boiss.	Perennial	Minor Asia	Xerofil
12	<i>A.commixtus</i> Bunge .	Annual	Southern Iran-Turan	Xerofil
13	<i>A.stevenianus</i> DC.	Perennial	Western Asia	Xerofil
14	<i>A.fabaceus</i> Bieb	Perennial	Northern Iran	Xerofil

According to I.Serebryakov's system, three species of *Astragalus* species (21.42%) that spread in the Daridagh area, are included into annual herbs, and 11 species (78.58%) are included into perennial herbs.

Another system is C.Raunkier's classification system. Unlike I.G. Serebryakov, C.Raunkier noted that important morphophysiological characteristics play a key role for the analysis of vital forms not the appearance of the plant (7).

In hemicrythophytes (Greek: hemin-half, crypto-concealing, fiton-plant) buds appear on the soil level, covered with the dead tissues or the surface of the soil. 11 species of *Astragalus* (78.58%) spread in the Daridagh region are included into hemicrythophytes. They are the followings: *A.szovitsii* Fisch. & C.A. Mey., *A.cancellatus* Bunge, *A.kochianus* Sosn, *A.schelkovinikovii* Grossh, *A.conspicuus* Boriss, *A.aduncus* Willd, *A.asterias* Stev. Ex Ledeb, *A.argyroides* G. Beck ex Stapf, *A.cadolleanus* Boiss, *A.stevenianus* DC, *A.fabaceus* Bieb.

Terofites (Greek: teros-summer, fiton-plant) are annual plants that carry the unfavorable period of the year in the form of seeds. Three species (21.42%) belonging to the *Astragalus* genus spread in the Daridagh area are referred to terofites. These are *A.corrugatus* Bertol, *A.tribuloides* Delile, *A.commixtus* Bunge species. They grow in favorable conditions and produce seeds. These plants start growing in the fall and winter in the state of vegetation and end their vital cycle by produce seeds in spring or summer next year.

The environmental factors are quite different. Water is of great importance as an ecological factor in spreading of plants in different climates, in spreading in various areas and in the formation of different groups. Plants are separated into different ecological groups because of their adaptation to areas with varying degrees of humidity.

Xerophytes (Greek: xero-dry, fiton-plant) are drought plants. They keep long-term physiological activity in

atmospheric and soil drought. Such plants have a number of features related to adapting to anhydrous conditions. The leaves of Xerophytes are dense, solid, and are made of 2 rows of pinky parenchymal tissues, cuticle is thicker, mechanical tissues are very many. So when it loses much water, the plant does not lose its turf tension. Some of the xerophytes' leaves are covered with surface wax. In many xerophytes, the leaves have been reduced. Xerophytes have high osmotic pressure on the cell juice.

Xerophytes do not like drought, they are only drought-resistant plants. When the water in the soil increases, they evaporate much water. Xerophytes are able to suck much water from a wide area thanks to their powerful root system. When there is a strong drought in the summer, the plant's growth stops and the leaves fall gradually.

Xerophytes are plants that spread throughout the deserts, dry fields, thorny sparse forests, rocks, etc. Xerophyte species among the *Astragalus* species dominate on other types of ecological species and in the studied area include 12 species (85.71%) out of the 14 species.

During the researches there have been identified the geographical-areal types and classes based on zonal and regional principles of the *Astragalus* genus species that spread in the Daridagh area (Table 1).

The types of species reflect the relationship between the flora of the region under study and the flora of the large areas covering this region, leading to the study of migratory routes from the historical point of view.

Generally, *Astragalus* species of two geographical types have been found in the area. Here, dominates the xerophyle areal type.

The Front Asian Range Class covers a wide area from the Mediterranean coast to the eastern border of Iran, covering the eastern part of the Mediterranean, the mountainous regions

of Armenia, Iran and Central Asia. The Iranian group extends to Tien Shan and western Pamir, covering a large area. This group covers all Iranian territory, especially mountainous and Caspian shore areas. This group is originally a group of Northern Iran (Atropathian) that incorporated mountain xerophytic plants in the area, including *A.cancellatus* Bunge, *A.kochichus* Sosn, *A.schelkovinikovii* Grossh, *A.asterias* Stev.ex Ledeb, *A.argyroides* G. Beck ex Stapf. *A.fabaceus* Bieb species.

Southern Iran-Turan range is represented by *A.corrugatus* Bertol., *A.commixtus* Bunge species. *A.tribuloides* Delile type concerns the Mediterranean sea -Iran -Turan areal class, *A.aduncus* Willd type concerns to the Front-Asian areal class, *A.cadolleanus* Boiss. type concerns to the Minor Asian areal class, and *A.stevenianus* DC. type concerns to the Western Asian group.

There has been determined that the areal class of two species has not been identified. The areal types and areal classes of *A.szovitsii* and *A.conspicuus* species have not been identified.

Thus, the researches do not fully reflect the types of *Astragalus* genus that spread in the Daridagh region. In our future studies, it is expedient to study these species in a complex manner.

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