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Astragalus Species and their Bioecological Features Spread in the Arajig Mountain of Julfa Region

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Abstract:

In the article the species belonging to the Astragalus genus spreading in the area of Arajig mountain of Julfa region have been shown. Arajig mountain lying 3071 height above sea level and concerning to the area of Arafsa village of the region covers the ecosystems of mountain xerophytes, forest, lawn (suburbs of the forest, sub-alps, alps) distinguishing for their rich flora. It is determined that there are 15 species concerning to Astragalus genus in this area, and their modern condition, abundance, vitality, bio-morphological and phytocenological features, their forming or the content of the phytocenoses participating as a component and their structure have been studied.

Key words: astragalus, species, genus, classification, flora, ecosystems, phytocenoses.

Introduction

Nakhchivan Autonomous Republic attracts everyone's attention with its geographical location, relief and characteristic flora. One of the main natural riches of this region is its rich plant-cover. This richness has been developed and formed from time to time by the joint effect of natural-historical, ecological and anthropogenic factors in the process of long evolution. Nakhchivan's rich flora of the type of xerophytes has been developed in the close genetic relation with the flora of

Mediterranean, Front Asia and Iran from the historical point of view. That's why our main aim is the fulfillment of several complex duties such as the productive use of useful species of plants, determination and protection of rare species.

It's known that the results of researches are getting out of use from time to time, or other species migrate from neighboring countries. That's why there is a great need of investigating them again and researching their newly formed features. For this reason it's rather an important, also actual issue to investigate proper constructive proposals, recommendations for their effective and persistent use on the basis of spreading, specification of the structure of species, determination of their natural resources, changing by the natural-historical, ecological, anthropogenic, zoogenic, and other effects, investigating the objective laws of adaptation to the new situation of the species belonging to the *Astragalus* genus spread in the region.

Material and method

Since 2012 one has found out about the species belonging to *Astragalus* L. genus in the area of Nakhchivan AR. Constantly in the spring-autumn season the expeditions have repeatedly been arranged in the regions of Nakhchivan AR, as well as in the Arajig mountain of Julfa region and the species belonging to *Astragalus* genus have been researched. During the researches the natural condition of the settlement where the species have been spread, phytocenoses which they formed, formations, and associations have been investigated with experimental methods (by setting up sample squares) by making phenological observations. In the use and determination of the gathered herbarium materials we first of all based on the known methods, long-term (1969-2012) own experiments and practices. Together with this, classical and modern botanical floristic methods, fundamental complete works "Flora of the USSR",

"Flora of the Caucasus", "Flora of Azerbaijan" have also been used. Determination of the names of systematical tacsons, names of their authors have been carried out according to the works of S.K.Cherepanova and "Taxonomical spectrum of the flora of Nakhchivan AR" (1, 338-430; 2. 3, 62-83; 5).

Experimental part

The Arajig mountain lies in the north of the Arafsa village, which is at 1600 m altitude. The large valley which is between the village and Arajig mountain and lies along the Arafsachay, Gaviksuchay, Sugovushan where they come together is called Khazinadara. The height of Arajig mountain is 3071 m above sea level. Oak forests (1850-2300m) called Arajig, Shahdara in the north-west of the mountain, Gavik, Gandy, Karbalayioruj in the north-east of the mountain lawn-shrubberies, stony-rocky places, mountain-steppes, high grassy forest-side lawns, sub-alp high grassy places, sub-alp lawns, alp lawns and alp carpets form a vertical zonalness. The area has a rich plant-cover and a flora appropriate to it. Investigated *Astragalus* species here play dominant, sub-dominant, mainly edificatory roles in phytocenoses, being formed in different natural ecosystems which differ for their ecological conditions and soil-climate features. Not only *Astragalus* but also *Astracanthas* grow in the plant type of ecosystems of mountain xerophytes, steppes, mountain-steppes, xerophytes sparse forests, rocky places because they are xerophytes types by origin.

Between 20.06 and 26.09.2012 we were on the expeditions in order to learn the number of species of *Astragalus* genus spreading in the area of Arajig mountain of Julfa region and modern situation of the determined species, their abundance, their phytocenoses, their associations and micro-groups, their role on the formation of their plant types. During the expedition it has been found out that 15 species - *Astragalus alpinus* L., *A. angustiflorus* C. Koch, *A. arguricus*

Bunge, *A. asterias* Stev. ex Ledeb., *A. calycinus* Bieb., *A. cornutus* Pall, A. *fabaceus* Bieb., *A. falcatus* Lam., *A. finitimus* Bunge, *A. gezeldarensis* Grossh., *A. glycyphylloides* DC., *A. lagurus* Willd., A. *Regelii* Trautv., *A. mesites* Boiss. et Buhse, *A. candolleanus* Boiss., *A. aduncus* Willd. belonging to *Astragalus* L. genus have been spread in the area of research. *A. Regelii* of those species is included into the "Red Book" Nakhchivan AR because of growing in the areas where there are a lot of anthropogenic influences, undergoing zoogenic factors, at the same time having lack of reserve (4, 412-435).

It's laconically spoken about the bio-morphological, bio-ecological, phytocenological features, abundance, reserve and importance of some main species of *Astragalus* spreading in the area of Arajig mountain.

Astragalus Regelii Trautv. – Regel bean grain – is a dense white-fluffy, perennial plant. The bowl is in 30-90 sm height. The leaves are 10-16 pairs in 6-25 cm length, ellipse-shaped but lower part is white-fluffy. The petals are line-shaped in 1 cm length is as high as the bowl. The petals are longer than the tubes of the bowl. The bowl is owl-shaped in 1 cm length. The pistil is yellow, 2 times longer than the bowl in 2 cm length. Seed-pot is long egg-shaped, dense-fluffy. The stamen is fluffy in 1 cm length. It blooms in June, its seeds ripen in July-August. It's a xeromezophytes. It belongs to the Atropatan geographical areal type. The cause of the insufficiency of its populations is the bad influence of ecological and anthropogenic factors. This species is included in "Red Book" of Nakhchivan AR by the status of *Near Threatened* – NT. There must be strengthened the protection of the populations and their biology must be studied in detail as species which their spreading areal is gradually getting smaller, biology is less studied, close to threat, growing in the main areas of Ordubad National Park named after acad. Hasan Aliyev (Pic. 1).

Figure 1. ***Astragalus Regelii*** **Trautv.**

According to the literary information these species have been spread in the area of Bilav village of Ordubad region. But we have found out that there is a new spreading areal in Arajig mountain of Julfa region, in the middle mountainous zones, grassy slopes of Tivi, Bist villages of Ordubad region and in the Sulunov area of Kulus village of Shahbuz region.

Astragalus alpinus L. – summer bean-grain – is a perennial plant having thin shoots. The bowl is being lengthen and standing a little upright. The leaves are in 5-12 cm length. The blossom crown is as high as the leaves or longer than them. The petals are in 1,5-2 mm length. The bowl is long-cogged. The pistil is in 10 mm length. The stamen is two-housed in 7-11 mm length. It's a mezoxerophytes. It belongs to the holarctic geographical areal type.

It has been grown in the Goy-Gol and Gapijig areas of Ordubad region 3065 m height above sea level, in high mountainous zones, in the lawns and steppes of sub-alp and alp zones. In such areas *Astragalus alpinus* is presented in corn-leguminous different-grassy phytocenoses. In grassy places *Bromus benekenii Holub, Stipa lessingiana* Trin. et Rupr., *Phleum phleoides Kars.,* of grains, *Lotus corniculatus* L., *Vicia variabilis* Freyn of leguminous plants, *Pulsatilla violacea*

Rupr., *Cirsium aduncum* DC. of different grasses have been spread. Grass state of the phytocenoses used as a pasture is of medium height and dense. Productivity is between 23-25 c/ha. As the plants are undersized in the alp-zones not only the mass of grass is less but also the productivity is low about 5-6 c/ha. In these areas small-cattle together with cattle are grazed which is forbidden.

A.mesites Boiss. & Buhse – Middle bean-grain is a plant in 30 cm height without a bole. The leaves are one-feathery, 15-20 pairs, short dense white-fluffy in 28 cm length. The blossom crown is longer than the leaves with blossom group. The petals are black-fluffy and lashed. The bowl is tube-shaped with the front in 1 cm length. The pistil is pink and 2 times longer than the bowl. The stamens are in 8-9 mm length, fixed to the bowl and one-housed. It blooms in June-July, its seeds ripen in august. These species can be seen in the middle mountainous zones, stony slopes of most regions of Nakhchivan AR.

Astragalus lagurus Willd. – Hare-tail *Astragalus* is a thorny pillow-shaped, short-branchy bush in 30 cm height. The blossom crown is in 18 cm length, the hedges are short-lashed. The bowl is as high as the pistil. The Pistil is white-pink in 24 mm length. The fruit is tumescent. It blooms in July, but its seeds ripen in August. It is spread in the dry stony-pebbly slopes, mountain lawns and rocky areas of upper mountain zones of Arajig mountain. These species can also be seen in upper mountain zones of most regions of Nakhchivan AR. That's why there are ecological factors having typical features for the plant of high mountain zones. The sun radiation is much more in the high mountain zones than in plains. On the other hand low temperatures in high mountainous areas, strong winds are the factors that shorten the duration of vegetation on plant. Fertility regime in high mountainous areas is formed according to the general climate background. That's why ecological condition of general high mountain zones assumes great importance in the life activity of plant as a whole,

especially in their structure, physiology and in seasonal growth. These phytocenoses in the area of Arajig Mountain can go up to the alp zone. Especially they can be seen more in the southward directions in the rocky and stony places having weak soil layer. In the area species like *Astragalus lagurus*, *A. euoplus*, *Willd*, *A. gezeldarensis* Grossh., Medicago *caerulea* Less, *Onobrychis cornuta*, *Onobrychis transcaucasica* and etc. have been spread.

In the Arajig mountain *A. angustiflorus* C. Koch, *A. arguricus* Bunge, *A. asterias* Stev. ex Ledeb., *A. calycinus* Bieb., *A. cornutus* Pall, A. *fabaceus* Bieb., *A. falcatus* Lam., *A. finitimus* Bunge, *A. glycyphylloides* DC., *A. candolleanus* Boiss., *A. aduncus* Willd. Species of Astragalus genus participated in their formation spread-in in the mixed form in the grass content of phytocenoses. Local bio-types formed by the shown species offer auspicious conditions for the growing of most short-lived ephemers and ephemeroids here creating particular microclimate.

Conclusion

In conclusion, it has been determined that there have been spread 15 species according to the actual materials, geo-botanical information got in the expeditions arranged for the investigating the species belonging to *Astragalus* genus spreading in the area of Arajig mountain of Julfa region.

The representatives of this species have a positive affect on the formation of natural ecosystems existing in the area. Species like *A. glycyphylloides* DC., *A. finitimus* Bunge, *A. cornutus* Pall spreading in the area have a great importance in the national economy, a technical plant and a little fodder crop. But these plant species and phytosenoses formed by the superiority of them are not productively used.

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