Procedia of Engineering and Medical Sciences
Volume: 09 | 2024

Influence of Linear Objects on the Flora of the Botanical-Geographical District of Nurota

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Abstract. Information about linear objects is presented in the flora of the Botanical-geographical District of Nurota. In this, the properties of “Basalt”, “Huaxin cement Jizzax”, “jizzax cement plant, “Carbonate” joint-stock company are illuminated.

Key words. Nurota, mountain ranges, hills, Koytash, Malguzar, Tunggyzlytau, Himalayan Pencil Cedar, Oriental thuja, “Basalt”, "Huaxin Cement Jizzakh", «Jizzakh cement plant», “Carbonate” joint-stock company.

The Nuratinsky district of the botanical geographical district of the same name includes the northern branch of the Nuratinsky Mountains (or the North Nuratinsky Range), which consists of the Nuratau and Koitash ranges, separated by the Saurbel pass and the valley of the Kulba-sai river near the district center of the Farishsky district of the village of Bogdon. In the east, near the city of Jizzakh. The North Nuratinsky ridge is separated by the Tamerlane Gate Gorge from the Malguzar ridge.

The length of the Nuratau ridge is 120 km; the Koitash ridge is 75 km. The highest point of the Nuratau ridge is Mount Hayatbashi (2,169 mn. The highest point of the Koitash ridge is Mount Tungyzlytau (1906 m) (Geographical Atlas of Uzbekistan, 2012). The North Nuratinsky Ridge is separated from the southern branch of the Nuratinsky Mountains by the intermountain Nuratinsky Valley (the Sanzaro-Nuratinsky depression). The slopes of the Nuratinsky ridge are cut through by numerous deep valleys of Mountain Rivers, temporary watercourses and dry riverbeds. The foot of the ridge is bordered by a hilly strip of foothills (Adyrov) and a sloping clay upland plain (Farish steppe). The ridge is one of the oldest mountain structures in Central Asia, and therefore the flora of this territory is characterized by great originality and a high level of endemism (Tojibaev et al., 2017; Tojibaev et al., 2020).

Currently, two districts have been allocated within the Nurata district, the border between which runs along the talweg of the intermountain Nurata Valley. Nurat district includes the northern branch of the Nurata Mountains (the Nuratau and Koytash ranges), the western tip of the Malguzar range and the Prinuratinsky remnant ranges. The flora of this area is estimated at about 1100 species and is characterized by the presence of 29 endemic and 23 subendemic species, including narrow endemics (Acantholimon subavenaceum Lincz. Allium svetlanae Vved. ex Filim., Lagochilus proskorjakovii Ikramov, Paraeremostachys anisochila (Pazij & Vved.) Adylov, Kamelin, Makhm.,

Stubbendorffia olgae R.M. Vinogr.). There is 1 endemic species known for the Prinuratinsky remnant ridges – Ferula dshizakensis Korovin.

Aktau region includes the southern branch of the Nurata Mountains (Aktau, Karatau, Khobduntau, Karachatau ranges) and the Kokchatau outlier. This area is characterized by the presence of 7 endemics (Autumnalia innopinata Pimenov, Vicoa krascheninnikovii Kamelin, Allium aktauense F.O.Khass. & Esankulov, Astragalus nuratensis Popov, Nanophyton saxatile Botsch., Cousinia pseudolanata Popov ex Tscherneva, Iris hippolyti (Vved) and more than 10 subendemic species.

An arid variant of almost all foothill and mountain types of landscapes of Central Asia (with the exception of high-altitude ones) is presented here. The general appearance of the Nuratau vegetation is quite typical of the arid mid-altitude mountains of Central Asia. ephemeral-wormwood and ephemeral plant communities predominate on the foothill plain and in the foothills (up to an altitude of about 800 m above sea level). The rocky slopes in the foothills belt are occupied by ephemeral sagebrush and thorny rocks.

The lower and middle belts of the mountains have a very mottled, mosaic vegetation cover, represented by bulbous, wheatgrass and coarse-grained communities (the so-called savannoids or dry grass steppes) in combination with variegated sagebrush and sparse forests of prickly almond, Bukhara almond, curly, dogwood, honeysuckle, rosehip, hawthorn and other xerophilic small-leaved shrubs. Intensive logging and overgrazing have led to the fact that currently the shrubby vegetation on the slopes of the Nurata Mountains is fragmented, sparse and does not occupy a large area. Semi-shrub communities, Fescue-feather grass steppes and upland xerophytes are developed above 1500 m above sea level (Zakirov, 1969, 1971: Vegetation cover of Uzbekistan, 1971-1984; Tojibaev et al. 2017; Tojibaev et al., 2020).

The Nuratau ridge is the westernmost point of distribution of the Zeravshan arch, which is now preserved here only in the form of several small local populations. The Nuratau ridge is one of three sites in Uzbekistan where relict nut and fruit forests grow. They are found along the valleys of the largest rivers of the northern slope of the Nurata range and currently represent a kind of cultural landscape (the so-called forest gardens), formed as a result of centuries-old horticultural activities of the local population. These are stands of different ages with an average fullness of 0.7-0.8, a predominance of walnut and the presence of mulberry, Sivers apple, apricot, pear, cherry, plum, with an undergrowth of hawthorn, rosehip, Semenov maple, fly honeysuckle in the composition of various fruit species. The average age of walnut trees in the gallery forests of the Nurata range is about 100 years old, natural regeneration is very weak. The condition of nut-fruit forests is steadily deteriorating due to lack of moisture, the decrepitude of many trees and the strongest anthropogenic pressure. Meanwhile, the death of even individual trees leads to irreparable losses, since each walnut, apple and apricot tree represents some kind of an ancient local variety.

The Nuratinsky State Reserve is located in the central part of the Nuratau ridge, on its northern slope. The Nuratinsky Reserve was established in 1975 in order to preserve the population of a rare endemic subspecies of wild mountain sheep Ovis severtzovi Nasonov 1914, as well as relict nut-fruit forests. The reserve has an area of 17,752 hectares and covers altitudes from 530 to 2,169 m above sea level. 2303 hectares are covered with forest (240 of them are walnut forests). The main forest-forming species is the Bukhara almond Amygdalus Bucharica Korsh (1751 ha). The list of flora of the reserve published in 2011 includes 820 plant species (Beshko, 2011). As a result of the botanical discoveries made in recent years, the list has been supplemented, and at the moment 838 plant species are registered for the flora of the reserve. 33 species of flora of the Nurata reserve are included in the Red Book of Uzbekistan. The attraction of the reserve is a unique natural monument, a huge tree of the Platycladus orientalis (L.)Franco in the Majerum tract, the trunk of which has a diameter of about 8 m, and the age is about 1500-2000 years.

The Aktau district of the Nurata district includes the northern slopes of the small Khobduntau (1672 m above sea level) and Karachatau (1101 m above sea level) ridges located in the south-west of the

Jizzakh region (Geographical Atlas of Uzbekistan, 2012). The vegetation of this territory is similar to the lower altitude zones of the Nuratau range.

It is known that in order to meet the needs of the population on Earth, the number of manufacturing enterprises, factories and factories is increasing. The number of production facilities is increasing, including in the Botanical geographical District of Nurota. As a result, negative changes in the ecology of the Botanical geographical District of Nurota are affecting the flora of the Botanical geographical District of Nurota. The impact of human life on nature can often be very harmful and sometimes destructive. To reduce the man-made impact on the environment, it is desirable if studies are carried out on the surface of linear objects. Examples of linear facilities include: pipelines, highways and highways, rail network, cable connections, and other facilities.

In recent years, we can include the following in the large production facilities established in the Botanical geographical District of Nurota:

№	Name of the enterprise	Name of the enterprise	Area (hectares)	Production capacity (per year)
1	“Basalt” LLC	2018	57	5000/t
2	"Huaxin Cement Jizzakh" LLC	2020	81	1.2 mln/t
3	«Jizzakh cement plant» LLC “Olmaliq KMK” As part of the JSC	2014	33.74	1mln/t
4	“ Yangijizzakh lime plant” LLC “Carbonate” As part of the JSC	1999	20	1.2 mln/t

The first stage of construction enterprise "Huaxin Cement Jizzakh" LLC york cement plant of Zafarabad District of Jizzakh region was launched in 2020. The enterprise has a capacity of 1.2 million tons of cement per year. The total cost of the project is $ 150.0 million. The plant was built directly at the expense of foreign investment. The enterprise produces cement products of the M-400 and M-500 brands. As part of the implementation of the investment project, Huaxin Cement So LTD (PRC) established a foreign enterprise "Huaxin Cement Jizzakh" in the form of a limited liability company. For the construction of a cement plant of the Jizzakh region, 81 land plots are allocated on the territory of the Zafarabad district of the Jizzakh region, which are not used in agriculture. "Huaxin Cement Jizzakh" LLC XK Noru uses earthwork plots containing minerals, including the Forish mine to dig glina and the eastern Uchkurgan mine located in Jizzakh province to dig limestone.

The Jizzakh cement plant, now officially named “Jizzakh cement plant”, has started its operations since March 2014. This cement plant was built in Zafarabad District of Jizzakh region. The raw materials necessary for production were found on the slopes of the "Balikli" and "Kotarma" mountains, 1.5 km from the plant, and it is noted that the reserve of limestone reaches 150 years. Launched in cooperation with the Turkish company “Dal Teknik”. The plant has an annual production capacity of 350,000 tonnes of white cement and 760,000 tonnes of Portland cement. Due to the high demand for white cement in the world market, more than 70% of the cement produced is destined for export. The plant is fed with oxactoch and loose soil from 8 km away, and hook mining is carried out 25 km away. In 2018, 1mln 70 tons of limestone, 264,000 tons of soil, 49,000 tons of Hook were mined and delivered to the plant.

Joint-Stock Company “Carbonate” is a large enterprise specialized in the production of limestone in the Republic of Uzbekistan. The history of the formation of a joint-stock company “Carbon” begins from the 80-90s of the past century. During this period, it was decided to build a mining industrial

enterprise in Uzbekistan on the base of the large-scale mining of limestone of the Jizzakh region, and its foundation was laid. The enterprise “Yangijizzakh lime plant” LLC is located 40 km from Jizzakh City next to the first-category “Jizzakh-Nurota” highway in the Forish District of Jizzakh region. The plant produces lime based on carbonate calcium.

Basalt LLC is located in the Forish District of the Jizzakh region and has been operating since February 2018. The area allocated for the operation of the enterprise is 57 hectares. The product is considered stones from the Basalt mine, which are melted at high temperatures to produce various building products. The production volume of the plant is 5 thousand tons per year.

As can be seen from the above data, these enterprises are located within a few kilometers of the settlements. They are required to lay asphalt roads, conduct electrical power cables, water and gas pipelines, for the purposes of electricity, natural gas, water supply, delivery of products, or product processing. These processes lead to a change in the flora of those regions. In the process of the activities of such enterprises, not only tons of natural resources are consumed, but toxic gases and waste from them pollute the environment. As a result, it can cause some plant species to decline and the endangered species to disappear. Therefore, the study and analysis of the flora of the main linear objects in the Botanical-geographical District of Nurota is of great importance.

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