

Geoecological principles of effective landscape organization of Karaulbazar district

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Abstract. Following article deals with the natural and economic-social features of Karaulbazar district analysis, including the landscape types of the district: porous sandstone clay, barren clay, sandy, oasis, watery, forest, gypsum-sandstone. As well as landscape types were studied, relevant conclusions were drawn.

1 Introduction

After the gaining independence of the Republic of Uzbekistan, the possibilities of studying the history, nature, talent and culture of our countrymen, regions, districts expanded. Indeed, how important it is to study the geography of the history of our motherland.

This study envisages the study and assessment of the landscape as a territorial complex of natural resources (intangible, material), that is, as an integral resource source.

Water reserves (flow module) formed due to atmospheric precipitation on the surface of the desert landscape depend on the topography of the place, the soil, the rocks that make it up. Their mechanical composition, porosity, the amount, duration and intensity of atmospheric precipitation are ineffective. Therefore, the use of one resource within the landscape leads to the depletion of other resources in the same place. (Nazarov, Tashov-2003). In addition, if one component is a natural condition for a certain economic sector, the second is a resource (material) for another economic sector. In this regard, it is important to divide the landscape of the district into types, assess its current state and predict its future development.

2 Literature review

The well-known natural geographer N.A. Gvozdetsky (1979), A.G. Isachenko (2001) and the school of Tashkent landscape scientists, especially N.A. Kogay, A. Rafikov, Sh. Zakirov based on their work, and an independent approach was taken in the main positions [-5].

In addition, cartographic aerospace research methods typical for the science of geography, in particular, landscape system, analysis, especially observation, geographical analogy (comparison), landscape indication, expeditionary methods are embodied in it, and the indication method is widely used. (Nazarov, Tashov, 2000). As noted by the German

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landscape scientist E. Neef, a set of landscapes forms a geosphere, and geospheres are reflected in landscapes. (Nif, 1974, p.12) Tashkent geographers interpret "landscape" as a local (small-typological) geosystem. An example of this is the renaming of Sh. Zakirov's "Fundamentals of Landscape Science" textbook (1994), the next edition (1999) as "Natural Geography of Small Areas"[6-10].

Famous geochemist A. Perelman, "landscapes" are the fabric of the biosphere. He argues that it is a system between the biosphere and the soil, at a higher level than the soil, that is, the living conditions for the soil (Perelman, 1987, p.91)

The term landscape in the narrow (original) sense is a general concept reflecting typological complexes. This idea was expressed in the works of B.B. Pashnov and S.S. Neustruev, the founders of landscape geochemistry, and partially L.S.Berg. Proponents of typological interpretation E.M.Murzaev, N.A.Kogay, V.M. Chupakhin, A.E. Fedina and a number of others are Georgian, Azerbaijani, Ukrainian, and Siberian geographers. Active supporters of typological interpretation are the well-known natural geographer N.A. Gvozdetzky. (1979, p. 131) [11-15].

3 Research methodology

The Karoulbazar oasis landscape type is the youngest anthropogenic landscape of the Bukhara region. Oasis landscapes (agro-landscapes) in the district are located in two geographically distant areas.

The main area is 95%, and it is located around the settlements of Navbahor, Jarqoq, Buzachi. The second is on the right bank of the Amu-Bukhara channel, that is, between the Dustlik pumping station and the Tudakul water reservoir "Uchlik" hydronode. There are 3 types of soil in agrolandscapes: brown, desert sandy and barren soils (Tursunov, 1991). Exploited brown soils form a long corridor along the Amu-Bukhara channel. The parent rock of the soil has an alluvial, proluvial basis. The surface part becomes denser towards the porous lower layer, passing into the gypsum layer. Gypsum is usually compacted alloys and fine-grained (10-30 cm deep). The age of such soils is old and skelty. They are poor in humus. The amount of humus is around 0.35%, carbonated (CO₂-7.20-8.35%). It is poor in nitrogen and phosphorus, slightly saline. High yields cannot be obtained from these soils without melioration measures.

There is a group of plateau like ridges in Korovulbazar and it's adjacent lands, which are called small tectonic structures belonging to the Kogon small folds group. Saritosh plateau 28metres in the territory of Qorovulbozor district is on the left side of the road 335metres in front of the Dostlik pumping station Jargok plateau is a continuation of Saritosh. It is north east of Korovukbazar I.e. 321-340 expending from south southwest to East "oil drive has highest of 385 metres in front of the border" . The border of Qorovulbozor district the northern foot of the Jargok and Setalontepa "with a height of 345 metres at the border " to the north-east.

These small tectonic structures are a product of the Neogene period "Aline stages" These hills rose to 800 900 metres in the Neogene period. But at the same time it eroded and its lower layers came to the surface and got closer to the earth surface. For example paleosent P1., eosin P2, borax (k2 CP+ m Tim svita) layers have been exposed to the surface in Saritosh, Jargok, Setalontepa plateau. These plateaus due to anthropogenic influence it has suffered from desertification in many places, that is it is necessary to plant and enrich plants in the method of ridges with the same absolute height transverse to the slope of the terrain 8.8 10 metres between ridges. In the lowlands at the foot of the plateau, black haloxylons, have been established there are now in good physiological condition.

After the Jargok oil gathering station, we walked 2. 3 km to the north Standing on the plateau, a wide field was observed , where several fieldroads spread out. The right road

goes to Shorcha town of Kashkadarya . The entire surface is covered with a sparse sedge, astragal, saffora, partake, kovrak.

Desert sandy soil forms the base of the cultivated lands around the ancient Kashkadarya valley (right bank from the road). Their mechanical composition is usually sandy (20-30% of physical clay particles smaller than 0.001 mm), the amount of humus is around 0.27-0.50, total phosphorus is 0.13%, and nitrogen is 0.019%. These soils are usually non-saline and require melioration measures. The main part of the Korovulbazar oasis is dominated by heavy sand tyajelaya suglina in the developed barren soil section (220 cm), (the amount of physical clay (<0.01 mm) is 45-60%). There are gypsum particles in the layer. When the soil dries, it forms a lump, and when it is wet, it increases the cohesion of the soil. Barren soils are relatively rich in humus around 0.75-1.00%, but saline solids around 0.4-0.6%, with sulfate salts (CO₄) increasing towards the lower layer.

Desert-pasture landscapes - the territory of Bukhara region (40.3 thousand sq. km.) belongs to the desert zone by its nature. Various landscapes belonging to the mountain and plain classes are embodied here. Among the desert-pasture landscapes, the porous sandstone-gypsum landscapes are distinguished by the size of the scale and landscape ecological characteristics. [10].

These include the areas formed by the erosion and disintegration of the Zaunguz Plateau, which formed a single land surface during the Middle Pliocene (middle white clay-covered plain according to Vishnyakov 1978, 99p.) due to the Paleo Zarafshan and Paleo Kashkadarya (partly Paleo Amudaryo) branches. (Yurev, Umarov 1971, 35b.) These consist of Devkhana (Chandir-Ispanli elevations). It is correct to say that the Devkhana Plateau is located between the two branches of Kashkadarya entering the Bukhara oasis, for example the Koroulbazar and Kumsultan (Gavan) corridors. Today, it is bordered by the Amu-Bukhara canal from the west. The northeastern parts of the plateau were filled with clay deposits of the Kashkadarya rivers, forming flat barren areas, while in the western part of the plateau, in the region of the Havan bridge, erosion formed dome-shaped hills and lowlands. (The island-like Kokcha hill here has an absolute height of 230 meters). Until 1980s, Devkhona, which is now considered an abandoned lake, was formed in the place of an erosion cliff with a depth of 40-50 meters. The surface of the Devkhana plateau has an undulating topography due to ridges running from the north-northwest to the south-southeast. [9].

Karakul Plateau Paleo-Korovulbazar of Kashkadarya, Kumsultan partially sheared and fragmented by Kuyimazor branches of Paleo-Zarafshan. Kumsultan lowland is especially well expressed in relief. It consists of a barren dry valley (4-7 km wide) stretching for 37 km from Kukcha hill (230 m) to the Poykent erosion hill. One of the important features of the above-mentioned plateaus is that they were formed due to endogenous and exogenous processes in continental arid conditions for many millions of years and morphologically changed. Especially due to the activity of the wind, the sandstone rocks are worn and sorted. As a result, sandy areas of different thickness and morphological shape were formed on large areas. In addition, clayey and saline landscape types with eolian, alluvial and deluvial basis have formed in the lowlands. [10].

Sandy desert landscapes are the types of continental deposits formed by the creative activity of the wind in desert conditions. These eolian sandy areas differ from gypsum sands of the Pliocene period in their fine-grained sorting, agrochemical composition, and instability (with a tendency to drift). There is no consensus on this matter, even among soil scientists. In the Atlas of Uzbekistan published in 1982 (Part 1), the right bank of the Amudarya belonging to the Bukhara region was named "Sands" in the soil map made by A.Z.Genusov, B.V.Gorbunov, N.V.Kimberg. In the remaining areas, sandy desert soils are reported to be widespread.

So, although sandy deposits have large areas in Central Asia, including Uzbekistan, they are still not well studied and not perfectly mapped from the point of view of soil science. In 1974, the well-known soil scientist N.V. Kimberg wrote that there are shortcomings in the registration of the land fund of the desert zone, that the soil maps were compiled on the basis of topographic maps, not field conditions. (Kimberg, 1974, 287 p.) [11].

As mentioned above, sandy desert soils occupy a large part of the land fund of Uzbekistan. According to A.G. Boboev (1991), 35 million hectares of the republic belong to the arid zone. Sands are polymineral according to their mineralogical composition. It contains more than 25 grains of minerals. Among them, light minerals (99.4-99.7%) are leading. Among them, feldspar (28.6-29.0%), quartz (36.6-39.6%), carbonate fragments (27.3-30.0%) are leading. Heavy minerals are represented by epidote, iron hydroxides (11.3-12.2), magnetite-ilmenite. The fact that the sands are rich in minerals indicates that the mineral nutrition of plants is relatively good (Nazarov, 1975). In sandy landscapes, surface runoff or local watercourses are not generated by atmospheric precipitation. It is appropriate to include them in the category of "landscapes without surface flow". An indicator of the suitability of this landscape type for grazing livestock is the vegetation cover. From this point of view, it is appropriate to divide them into suitable (70-100%), less suitable (40-70%), and unsuitable (10-40%) groups for pasture livestock.

Clay desert landscape type In Qarovulbazar district, clay landscapes have alluvial, proluvial and eluvial (Tertiary sandstones) basis. Their mechanical composition is usually heavy, and the amount of physical clay in the upper one-meter layer is around 38.2-90.0%. The mechanical composition of the type of soils referred to as barren of clay landscapes is somewhat lighter. In the rocks that make up such landscapes, the amount of physical clay in the surface layer (0-15 cm) reaches 6.6-54.6%. Clay landscapes are usually carbonated, relatively saline, with gypsum layers 20-40-50 cm deep. The amount of humus is around 0.5-1.24% (Butskov, Nosirov, 1961; Musaev, 2001). Tall plants usually do not grow in clay landscapes. [3,6].

However, blue-green algae, moss, and lichens cover the wetted surface layers due to spring rains. According to N.N. Bolishev (1952), blue-green algae increase the alkaline environment of clay layers and create a harmful chemical environment against the growth of higher plants. However, during the evolutionary development, the barren surfaces are lightened, worn, and specific natural positive meliorational changes occur. (Butskov, Nosirov, 1961, p. 113)

Although clay deserts are unsuitable for grazing livestock, the water produced in them by spring rains is of practical importance. [9].

The famous desert scientist V.N. Kunin wrote that more than 50% of the atmospheric precipitation falls in the spring months, which is a great opportunity for nature and for conducting economic activities in the deserts of Central Asia (1980, p. 47). It is known that 50 percent of the precipitation in the region occurs in spring. Due to this rainfall, puddles form on clayey landscapes.

4 Analysis and results

Another litho-ecological feature of the above-mentioned porous sandstone and gypsum plateaus is the accumulation of carbonate salts in the soil core under the conditions of a long-lasting arid climate and brackish syzot waters (lagoons) close to the surface of the earth. Later, the salts were washed away, and gypsum and lime, which are difficult to dissolve in water, developed as relicts. (Perelman, 1961, p. 406).

The surface part of the gray-brown soils typical for these areas is crumbly, carbonated, and the lower part is gypsum. The amount of gypsum reaches 46-96%. (Perelman, 1961, 343b, Butskov Nosirov, 1961, 66 p.). In addition, salty rock alloys were formed due to the

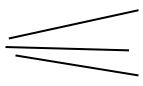
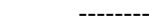
activity of plants in this sandstone and gypsum land. Its amount varies depending on the age of the soil. Some desert scientists include these places in the "gravel-gypsum" landscape type (Jumashov, 1990, p. 45) [7].

These soils are usually saline (solonchakovat oy) and salty (solontsevat oy) and have different lithological composition. The thickness of the eluvial layer also varies depending on the hypsometric condition of the relief. In porous sandstone-gypsum landscapes, the amount of humus and water-soluble salts does not differ significantly from clay deserts. Humus is 0.4-0.6% on its surface, and it sharply decreases in the lower layers. In most cases, they are moderately saline, with a solids content of around 1-2%. This indicator usually starts at a depth of 50-60 cm.

In these landscapes, the vegetation cover is usually sparse, and gypsophytes: frankincense, wormwood, ili singrena, bittersweet, sophora), ether, carrack and ephemerals like the leaders.

As mentioned above, this type of landscape has relatively high hypsometric height and undulating relief. In most parts of the landscape, atmospheric precipitation produces surface runoff during the winter and spring months. Phytomelioration of such places with the method of moisture collecting furrows is desirable. Especially barren, windy areas, man-made landscapes formed in regions related to gas and oil exploration and production need such measures. The methods of enriching these landscapes with low grazing capacity by means of phytomelioration have been proven in practice by the scientists of the Institute of Botany of the Academy of Sciences of Uzbekistan (Theoretical main and the method of phytomelioration, T. 197). [10]

Table 1. 1-Schedule. Desert soil types.

Soil name	Physicist level of mud %	English name
sandy 	0-5 5-10 10-20	Interspersed -sand sticky sand, sand
bald 	20-30 30-45	light sandy gently sandy
bald 	45-60	hard sandy
bald  	60-75 75- 85 >85	light mud (CO ₃) gently mud (CO ₃) hard mud (CO ₃)

Since the Lower Quaternary, it has been the site of eolian processes. As a result, island-like barren areas and desert sand landscapes of different thickness and shape are formed in large areas.

Guarded oasis landscape type- These landscapes are the youngest anthropogenic landscapes of Bukhara region. Oasis landscapes (agro-landscapes) in the district are located in 2 geographically distant places.

The main one is that 95% of the area is located around the settlements.

The second one is on the right bank of the Amu-Bukhara canal, that is, between the "Dostlik" pumping station and the Todakol water reservoir "Uchlik" hydroelectric station.

Desert sandy soil forms the base of the cultivated lands around the ancient Kashkadarya valley (right bank from the road). Their mechanical composition is usually sandy (20-30% of physical clay particles smaller than 0.001 mm), humus content is around 0.27-0.50, total phosphorus is 0.13%, and nitrogen is 0.019%. These soils are usually non-saline and need reclamation measures. The main part of the Qorovulbazar oasis is

dominated by heavy sand in the developed barren soil section (220 cm). (the amount of physical clay (<0.01 mm) is 45-60) There are gypsum particles in the layer. When the soil dries, it forms a lump, and when it is wet, it increases the cohesion of the soil. Barren soils are relatively rich in humus around 0.75-1.00%, but saline solids around 0.4-0.6%, with sulfate salts (SO_4) increasing towards the lower layer.

Such soils need reclamation measures, especially salt washing. According to the observations of 1990, the oases - barren soils were subject to secondary salinization in many places.

These soils were previously automorphic according to the water regime, but now they are semi-hydromorphic.

At present, in many lands, seepage water has risen, and the soil has a hydromorphic water regime. Organized ditch systems (20 pogon.meters per hectare) do not meet the requirements. It is necessary to improve the useful work coefficient of the plants. It is necessary to improve the efficiency of land use. The productivity of district crops is very low. [7]

The mechanical composition of the soil is determined by the amount of marine silt (particles smaller than 0.01 mm).

Desert-pasture landscapes- Porous sandstone-gypsum type of landscapes. Today, it is bordered by the Amu-Bukhara canal from the west. The northeastern parts of the plateau were filled with clay deposits of the Kashkadarya rivers, forming flat barren areas, while in the western part of the plateau, in the region of the Havan bridge, erosion formed dome-shaped hills and lowlands. (The island-like Kokcha hill here has an absolute height of 230 meters). Until 1980s, Devkhona, which is now considered an abandoned lake, was formed in the place of an erosion cliff with a depth of 40-50 meters. The surface of the Devkhana plateau has an undulating topography due to ridges running from the north-northwest to the south-southeast.

Sandy desert landscape type- Sandy desert landscapes should be understood as the type of continental deposits formed due to the creative activity of the wind in desert conditions. These eolian sandy areas differ from gypsum sands of the Pliocene age in that they are fine-grained and unstable in their agrochemical composition (with a tendency to drift). When we went on a practical expedition to Qarovulbazar, the groundwater level in the lands around the canal was 2 m. at the expense of We are going on a big asphalt road, after walking for 500 meters, we entered through the inscription Bozachi, both sides of the road are cotton fields. On Boraverish, we saw thick saxes groves, and there were sand paths in the saxes groves leading to Nogora Hill, so we entered through this road. On the way in, in the deep places where garbage was dumped in the saxaul fields, groundwater came out and turned the soil white. On the hills, there are small plants such as saxaul, poa, "vashak", boromus, and "isfarak". We took a picture in the saxaul fields, then teacher Nazarov determined the direction of where we were with a compass. The slope is north-northwest, south-south-east.

Teacher Nazarov measured the area of 1 square meter and calculated the number of plants there and which plant spread by 4. Then teacher Toshev and I have 1 square meter. when we measured the area, we divided the cell by 4 and counted which plants were spread.

Clay desert landscape type- In Qarovulbazar district, after the Dostlik canal, we used to come along the canal from a place called Chetvyorg, and the canal ended. After 300 km from the left side of the canal, the road ended and we went to a big asphalt road. 100 m. after walking there is a cotton factory. The teacher explained that big ditches were dug, Kashkadarya water once supplied these areas with water, and the deepest places were in these areas.

According to the scale, the desert is second only to sandy and loamy, brown soils with a brown color. Basically, clayey landscapes have alluvial, proluvial and eluvial (Tertiary

sandstones) foundations. Their mechanical composition is usually heavy, and the amount of physical clay in the upper one-meter layer is around 38.2-90.0%. The mechanical composition of the type of soils referred to as barren of clay landscapes is somewhat lighter. In the rocks that make up such landscapes, the amount of physical clay in the surface layer (0-15 cm) reaches 6.6-54.6%. Clay landscapes are usually carbonated, relatively saline, with gypsum layers 20-40-50 cm deep. The amount of humus is around 0.5-1.24% (Butskov, Nosirov, 1961; Musaev, 2001). Tall plants usually do not grow in clay landscapes. Residential landscapes The center of Korovulbazar district is the city of Korovulbazar. The city of Qarovulbazar was established on February 23, 1981. The main bus station and the Qarovulbazar railway station are located in the city. [9]

The settlements are as follows: "Sardoba", "Bo'ston", "Navbahor", "Bozachi", "Jahargok", 145-razezd and "Korovulbazar" city. The first self-governing bodies were established in the territory of Korovulbazar 75 years ago. Since then, it was called "Bozachi" (Middle Desert) village council. As a result of the development of steppe lands, in 1983, the village council of people's deputies "Navbahor" was established.

5 Conclusion/Recommendations

Over the past half century, Bukhara region has experienced its own stages of historical development. Its political-administrative structure changed several times. One of these important changes is the formation of Qarovulbazar district within the region.

District landscapes were divided into types in order to use them rationally. Each landscape type and its morphostructure were analyzed.

It should be noted that the destruction of ecosystems leads to dire ecological consequences rather than environmental pollution. In the conditions of the Bukhara region of the Republic of Uzbekistan, where water resources are scarce, the most urgent problem is to increase the efficiency of the use of land included in the account of irrigated agriculture, rather than the development of new land. Such an event will increase the possibility of preserving existing flora and fauna reserves and natural geosystems in the area, and ultimately improving ecological stability. (Nazarov I.K., Allayorov I. 1998, 87, 88 p.)

I found it necessary to quote the following sentences of Professor A.A. Rafikov: "A geoecological problem is not big or small, because if we look at the small one and carelessly think that it will not lead to extraordinary events and go on doing other work, that small problem will develop after a certain time and become a big one becomes a problem".

In conclusion, it is permissible to say that "the landscape exists, but its interpretation is a disaster" (I.K. Nazarov)

As a result of the studies, the following suggestions were made:

1. To improve the efficiency of using the land included in the account of irrigated agriculture rather than the development of new land in the Korovulbazar oasis.

2. On the right side of the Amu Bukhara canal, through the pumping station of the Saritash and Dostlik canals, a recreation area will be established by crossing a ditch with a hill.

3. It is necessary to improve the work efficiency of using tools.

4. It is necessary to improve the efficiency of land use.

5. Elimination of imbalance in the placement of agricultural crops.

6. Termination of the use of pastures in the desert zone, strengthening control over the users of the pastures.

7. Pay great attention to the road system in the desert area, grow trees that grow in the desert area around the road.

8. Ecological elimination by organizing a recreation zone in the saksovl field.
9. Reduction of polluting emissions, prevention of ecosystem destruction.
10. Strengthening sustainable landscapes in the design of administrative and communal facilities.
11. If these proposals are resolved positively, I think that the development prospects of the district will improve.

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