PHYSICAL GEOGRAPHICAL FEATURES OF THE BADKHYZ AND GARABIL HIGHLANDS

S. Bayramgylyjow[1], A. Rizakulyyew[2], G. Narmuradov[3]
Teacher at the Department of Biology and Teaching Methods of the Turkmen State Pedagogical Institute named after Seyitnazar Seydi[1,2,3]
https://doi.org/10.5281/zenodo.19491970

Abstract. *This article provides information on the physical and geographical features, agroclimatic conditions, soil cover characteristics, soil cover structure, flora and fauna of the Badhyz and Garabil highlands located in southern Turkmenistan.*

Keywords: *Garabil, Badhyz, Paropamiz, relief, climate, flora, fauna, geographical features, soil, agroclimate.*

Introduction

The article presents the physical and geographical characteristics of the Badkhyz and Garabil highlands, located on the southern border of Turkmenistan, their soil cover, relief, average annual air temperature, and precipitation. The aim of the study of the physical and geographical conditions of the Badkhyz and Garabil highlands is to determine the areas for crops that can be grown using agricultural methods.

Relief of the Garabil-Batkhyz Uplands. This district is located in the south of Turkmenistan. Geographically, it extends from west to east to the Obruchev steppe. In the north, it borders with the Murgap-Tejen and South-West Karakum districts[1]. The Garabil and Batkhyz uplands were plateaus until the ancient Turanian alluvial period. However, as a result of geological erosion processes, large streams were formed in this region. These streams brought sedimentary rocks to the Garabil and Batkhyz foothills. Today, the channels of such ancient streams are well preserved.

Sandy, medium and light loamy soils occupy 40 percent of the area of Badkhyz. This soil is mainly dominated by pistachio trees. The interstices of pistachio trees are covered with dense perennial grass cover. In addition to the soil types analyzed above, in Badkhyz and Karabil (70% of the area) they are widespread on the side slopes of ridges and in hollows. On such soils, Badkhyz wormwood is mainly found.

Karabil is also distinguished by its natural conditions. In particular, its relief gradually descends towards the Southern Garagum. Accordingly, the sandy relief determines the nature of the soil and plant cover. In Northern Karabil, on the soft sandy loamy soil between the system sands, Circassian, sedge and ephemerals grow. The yulak is very dense, it is often found in the sand massifs here. At an altitude of 300-400 m above sea level, the desert shrubs disappear, and a dense grass cover appears in their place.

It is distinguished by its sloping hilly relief, located between the Murgab and Tejen rivers. In many places, takyrs, salt marshes and salt lakes have formed in the hollows between the hills. The absolute height of Badhyz is from 600 m to 1325 m. Morphologically, Badhyz is divided into two parts, namely the mountainous part and the hilly part.

The mountainous Badhyz itself consists of several ridges extending parallel to each other. These include: the Zülpükär, Kyzylgädik, and Danagerman ridges. Among them, the Danagerman

ridge is located closest to Badhyz. This ridge extends due east from Pulkhat, towards the village of Danagerman. The northern slope of the ridge is divided by several valleys. The Kyzylgädik ridge begins to the east from the village of Danagerman. This ridge is similar in character to the Danagerman ridge and is composed of limestone. The Kyzylgyadyk ridge rises even higher between the Merdivan River and Rahmatur, where the highest peak of the entire Badkhyz is located, rising 1,255 m above sea level[2].

Another distinctive feature of the relief of Bathyscaphe is the presence of irregular depressions here. The largest of them is considered to be Lake Yeroylanduz. It has an area of 500 km2 and is located 273 m above sea level. The depression extends to the west to Kyzyljara. In addition to Lake Yeroylanduz, in Bathyscaphe there are irregular depressions such as Shorkel, Shoraymak, Dortlikel, Mamakshor, Akrabat, Kelleliduz. The depressions here were formed in natural, that is, lithological and tectonic conditions as a result of water erosion, and then, due to the work of the wind, they became even deeper than before. As a result, over a long period of time, depressions were formed that had no connection with any land.

From a distance, Garabil is a low mountain in the form of a plateau, not very high, located in front of Mount Paropamiz. By the nature of its relief, it gradually descends to the north in a steppe shape. As you go east, the relief of Garabil gradually descends towards the Obruchev Steppe, and when you reach the Obruchev Steppe, it loses its former appearance and turns into a plain. The absolute height of Garabil reaches 980 m. Garabil stretches in width. The tributaries of the Murgab and Abykoysar rivers from the west and the Antguy in the east divide it into a number of parts, ravines, and channels. Currently, most of the channels in Garabil are dry. An ancient stream came here from Paropamiz. However, over time, as a result of the change in the direction of the stream to Abykoysar, the flow of water into these channels decreased and almost all of them dried up.

The geological formation of Karabil and its current close form were completed in the Quaternary period. The Murgab and Tejen rivers acquired their current close form in the Khazar and Baku periods. The formation of the ancient hydrographic network in Karabil began in the Khazar period. The result of continuous erosion work has allowed the formation of various forms of relief.

The northern part of Karabil rises up to 700 m above sea level. The main relief here is a typical hill. However, this ancient relief is divided into separate parts by hills and valleys. Agroclimatic connection of the Parapamiz mountain and Badkhyz-Garabil. Paropamiz. This region includes the heights in front of Paropamiz, Garabil and Badkhyz. Geographically, it occupies the southern part of the South-Eastern Karakum.

Agroclimatically, this region is distinguished by its hot summer, cold winter, scanty rainfall, and few cloudy days. The temperature in July reaches 28-320C, while in January it does not fall below 6-70-0C. The absolute minimum temperature varies from 20.40C (Tagtabazar) to 32.80C (Kushgy). The average annual temperature is 16.40C, which is higher than in the northern and central regions. The number of frost-free days above 100C reaches 235. During the growing season, the temperature exceeds 4800-51000C. The relief of the region determines the nature of its climate. Therefore, the Paropamiz region can be divided into mountainous, foothill, desert, and valley agroclimatic subzones[3].

The average temperature in July on the Parapamiz mountain is 20°C, in January 20°C, the average annual temperature is 10°C, and the number of frost-free days is about 190. The amount

of precipitation is 115-285 mm. The agroclimate of the mountainous region is favorable for growing dume crops.

The foothills and valleys are related to the desert in terms of their agroclimatic characteristics. The temperature is higher than in the mountains, the number of days above 20°C reaches 235, and the number of frost-free days is even greater. The amount of atmospheric precipitation is 115 mm. In the foothills, the temperature during the growing season is above 4800-51000°C; 77 percent of the annual precipitation falls in the winter and summer months. Gradually, as you go north, the landscape turns into a desert. The absolute maximum temperature in the desert reaches 40°C, frost-free days are slightly less (238 days) than in the foothills, and cloudy days are less (30 percent). Thus, the slopes of Karabil and Badkhyz, covered with various green grasses, allow the use of the heights for grazing livestock, while the plains at the foothills are suitable for farming.

Garabil-Bathyz agroclimate. The average annual temperature here reaches 140C. However, since the region is located in the dry subtropics, the average July temperature in it, despite the lowland mountain range, approaches 280C. On some days, at the end of July, the air temperature may reach 380C, and its maximum may exceed 480C.

Winter (in other places than the Garabil plateau) is not severe. The average January temperature does not drop below 0.3-2.30C. However, in some years there are days when the temperature drops to -33 - 360C. However, these weather conditions are not permanent. The number of days with temperatures above 100C can reach 213. However, it does not exceed the average of 190 days. The total temperature above 100C varies from 3000C (Lekker) to 45000C (Kushgy)..

Soil cover of Badkhyz and Garabil. Garabil is located at altitudes from 400 to 1000 m. The amount of precipitation here reaches 300 mm, and the vegetation consists of various grasses and wormwood, which cover the entire surface. The thickness of the soil cover is about 70 cm. The soil cover consists of loess-type clayey rocks. However, in the Garabil and Badkhyz highlands, clayey rocks are replaced by silty clayey rocks. The upper layer of this soil is not very salty. The carbonate horizon begins at a depth of 40-60 cm in the lower horizon. In the upper horizon, the amount of humus is slightly higher (up to 2 percent) compared to some soil types. Typical melen soil is also rich in phosphorus[2].

Badkhyz and Garabil are located on the slopes of the Paropamiz Range, which are distinguished by their mountainous relief. Some of their places rise to 1300 m above sea level. This type of relief creates a vertical strip of vegetation. In the spring, the surface of this mountainous relief is covered with grasses and cereals. From a distance, this landscape resembles a desert. In many places, wild barley is found.

In Badkhyz, pistachio forests are found near Kushka. In some places, these trees also grow on bare rocks. The area of pistachios in Badkhyz alone is about 300-400 km^2.

On the Garabil, Badkhyz heights and other heights, on diluvial, proluvial loess-type soils, clayey-stone admixture horizons with a thickness of 1-1.5 m are formed. In the areas where this soil is distributed, the main plant cover is cereals, wormwood. Above it, on the Badkhyz and Garabil heights, it consists of a formation of plants. A distinctive feature of this soil, compared to other desert soils, is the lack of rotting, as well as rapidly dissolving salts. In addition, it is distinguished by the activity of living organisms (fauna) in the soil. Carbonate prevails in the soil. Pale soils are also not uniform. They are divided into three parts according to their morphological characteristics and origin: colored, typical, and dark.

Fauna of Batkhyz and Karabil. The Batkhyz and Karabil regions were geographically influenced primarily by the Karakum and Afghan-Iranian faunal provinces. On the other hand, the fauna of India, the Hindu Kush, and the Central Asian highlands may have contributed to it to some extent. Therefore, the occurrence of Khorasan and Caucasian species typical of desert plains here (on the Kyzgedyk plateau to the east of Batkhyz: the Caucasian agama, partridge, pheasant, and mammals: the sable) indicates a strong connection with the surrounding zoogeographic provinces of the region. One of the distinctive features of the fauna here is the occurrence of a number of animals typical of the highlands around Lake Yeroylanduz. However, although they are typical of the highlands, they live in hollows. Therefore, this region is rich in ibex, gazelle, and kulan. Due to the decrease in the number of kulans in Badkhyz, the Badkhyz State Reserve was established. The measures taken to preserve and increase the kulan population are bearing fruit. Of the rodents, the porcupine is the most common. Of the predators, wolves, foxes, jackals are found in the mountains and plains, and birds are abundant in the autumn and spring seasons[1].

Conclusion

The physical geographical conditions of the Badhyz-Garabil uplands, according to our observations in the Gushgy and Tagtabazar districts located in the south of Turkmenistan, occupy an intermediate position between mountainous and desert zones. Here, its geographical conditions range from foothills to mountains. The fauna and flora are distinguished by their diversity and abundance of species, due to their similarity to mountain fauna and flora. Having studied the physical geographical conditions of Garabil and Badhyz, it is necessary to increase the number of crops grown here using the intercropping method, which will help save water resources.

References

1. Amannyýazow G. Türkmenistanyň daglary we olaryň resurslary. Aşgabat, 1975.
2. Николаев В.Н. природные кормовые ресурсы Туркменистана. Ашхабад, “Ылым”, 1972.
3. Аманнизов К.Н. Геологическое строение и минерально-сырьевые ресурсы Туркменистана. М.; Знание, 1990