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Relief influence on plant cover of Zangilan District

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Abstract

The article is an analytical review of the literature that considers the influence of relief on the spatial distribution of individual plants and plant communities. Since time immemorial, man has learned to use the unevenness of the earth's surface, whether it be convenient bays or fertile valleys. The position in the relief plays an important role for representatives of the flora. Acting not directly, but indirectly, through the transformation of the main climate factors, it has a noticeable effect on the formation of vegetation types. In the article, each of the morphometric indicators of the relief of the vegetation cover of the studied region was analyzed in the ArcMap program. The influence of these parameters on vegetation was studied separately. Slope exposures are of great importance for the life cycle of plants. The steepness of the slope affects the species composition and structure of phytochromes. Also, the article discusses the current ecological state of the pearl of the forests of Europe and the South Caucasus - the eastern plane tree. As a result of the intensive and illegal logging of these forests by the Armenian Republic, their area has significantly decreased, and ways of their restoration are also being considered.

1. Introduction

The forest is one of the most important natural resources for humans. Humanity has been engaged in forestry and forest science for several centuries. Derivative forests are still the main building material to this day. Throughout the history of forestry, it was necessary to use the forest nationally and replenish the used resources in the most productive way (Yashina, 1960, Yantser, 2005).

The territory of Karabakh is located between the rivers Kura and Aras, it is limited in the east by the Kura-Aras lowland, in the west and northwest by Armenia, and a very small area borders Georgia. Its total area is 29,040,381 km^2, which is 25% of the territory of the Republic of Azerbaijan. The territory of Karabakh consists of mountainous and flat parts. Its length from northwest to southeast is 600 km. The territory of Nagorno-Karabakh is 4363 km^2, and the area of the plains is 24677.4 km^2. Karabakh's favorable relief and climatic conditions contributed to forming a dense river network and rich soil and vegetation cover.

2. Method

The territory of the Zangilan district is located in the zone of medium and low mountains and has a complex, fragmentary structure on the surface. The district is mountainous in the west and plain in the east. In addition to sedimentary rocks, Jurassic, Cretaceous, and Neogene-anthropogenic deposits, which are volcanic rocks, are widespread in the region. The fact that most of the region is mountainous has led to the fact that the plains cover a small area here (Figure 1).

Looking at the map of the absolute heights of the study area, we see that 3% of the area is 2000 m above sea level, 7% is 1501-2000 m, 15% is 1001-1500 m, 38% is 501-1000 m, and the rest and part of it is covered by parts below 1000 m. Such altitudinal zones in the administrative region also affect the assimilation and degradation of plants common here (Sharay and Shary, 2011, Korner, 2003).

The steepness and inclination of the slopes play an important role in the formation of the vegetation cover of the area (Figure 2, 3). Both slope maps of the study area were prepared and analyzed using the ArcMap software. It turned out that the northern slopes are a minority here.

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Therefore, steppe plants are more common (Shary and Shararya, 2002).

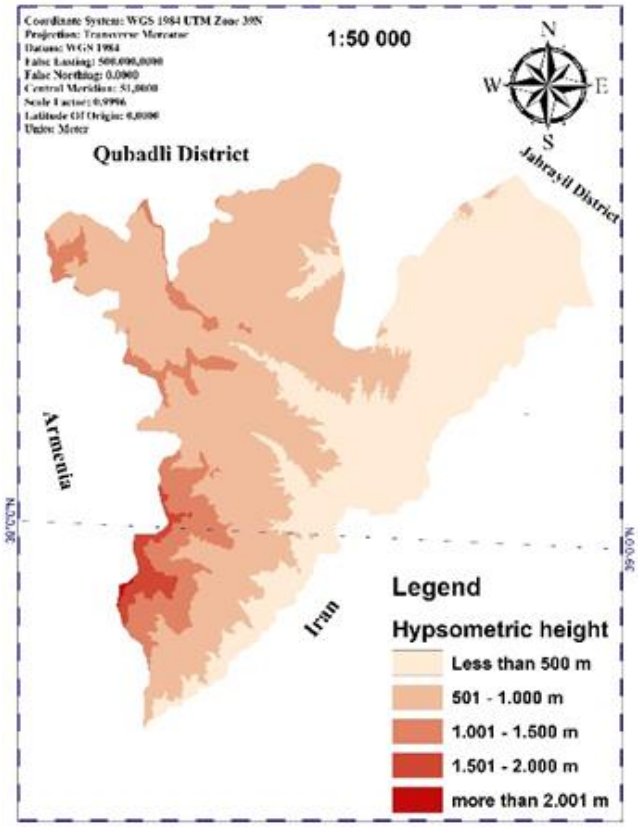

Figure 1. Hypsometric height of Zangilan district

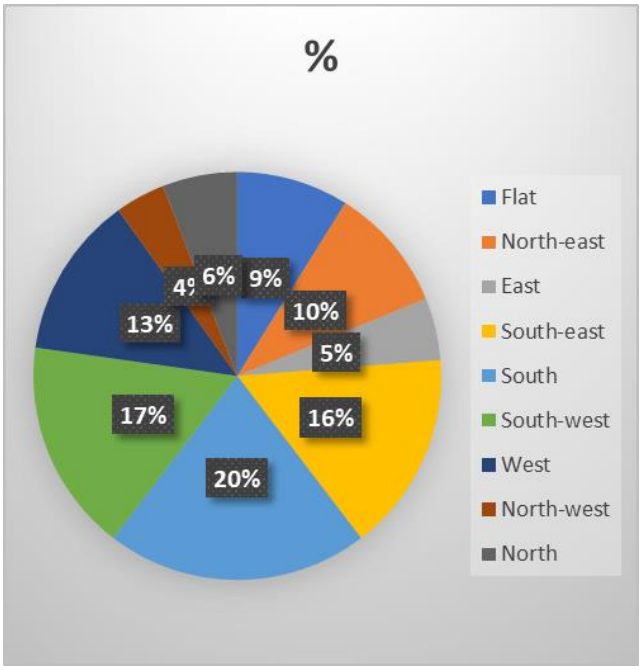

Figure 2. The aspect of slopes of the Zangilan district

Along with the visibility of the slopes, we also analyzed the slope in the same program. the lack of slope in most of the area has led to greater plant assimilation and degradation in the region (Sokolova, 2016).

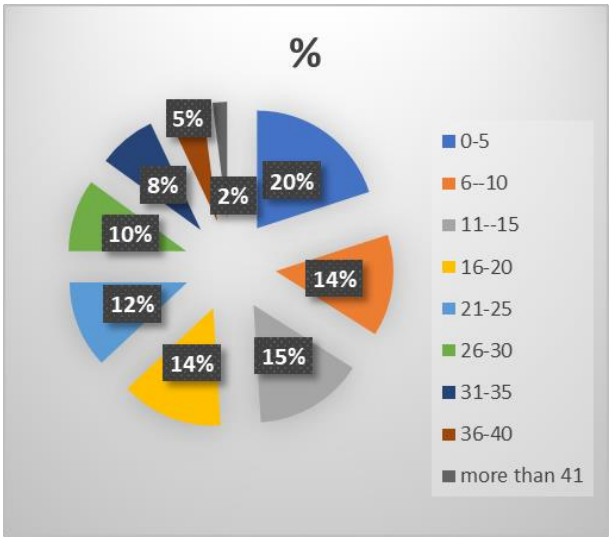

Figure 3. The inclination of the slopes of the Zangilan District

3. Results

As a result of the peculiarity of orographic conditions in the territory of Karabakh, there are landscape belts of natural complexes of mountain forests from west to east and from north to south. The forest area is 340,000 ha, of which 247,000 ha (13,000 ha are valuable forests) have been occupied by the Republic of Armenia for 27 years. Of these, state forests make up 986 hectares of forest area, 710 hectares are occupied by collective farm forests, and 560 hectares are roads, water channels, and cultivated forests. More than 460 species of wild trees and shrubs grew in these territories, of which 70 (blackberry, wormwood, Aras oak, linden, oriental plane tree, common pomegranate, forest grapes, pirkal, beech, Eldar pine, common palm, willow pear, etc.) are endemic. Currently, these species are on the verge of extinction from the face of the Earth (Khalilov and Quliyev, 2014).

4. Discussion

One of the valuable plant species is the oriental plane tree (Mammadov and Khalilov, 2002, 2005). The only natural forest of the eastern plane tree in Europe is located in the western part of the Lesser Caucasus, in the Zangilan region. These plants, located in the basin of the Basitchai River in terms of the physical condition of the trees and the area of natural tree plantation, are the largest plane tree forests in the world.

A plane tree, or as it is also called "eastern" – is one of the oldest species of flowering plants. For its beauty, picturesque view, and unique bio-ecological features, it is called the pearl of the woody flora of the East, and for its mighty trunk, majestic and dense crown - the giant tree of the South (Prilipko, 1975). Despite the wide and dense structure of the leaves in winter, he dumps them. The trunk is very powerful (up to 40-50 meters in height, and the circumference reaches 18 meters). The leaves are alternate, palmately lobed on long petioles. This plant is dioecious and has inflorescences of both female and male types. Small flowers are unisexual. Sycamore flowers are small, in dioecious inflorescences, one- and many-headed. The male flowers are yellowish in color and have

a double perianth. Female flowers are often with a simple perianth and develop in larger globular purple capitate inflorescences. Sometimes they are thin on a long peduncle, consisting of 2-7 pieces. Since both flowers are on the same tree, they are different plants of the same species.

The plane tree is a fast-growing and long-lived tree. Eighty percent of trees grow from rootstocks. The plane tree begins to bear fruit at the age of 10-15 years, the most fruitful period is 150-200 years. Chinars can live up to 2000-2300 years. Lightweight, durable wood is used in the production of plywood, parquet, furniture, shipbuilding, and also in landscaping as a decorative wood.

On the initiative of the well-known naturalist, academician Hasan Aliyev, to protect the plane tree forest in the Zangilan region, by the decision of the Council of Ministers of the Azerbaijan SSR dated July 4, 1974, the Basitchay State Reserve with an area of 117 hectares was created, which is a unique natural monument. In October 1980, the area of the reserve decreased by 10 hectares and amounted to 107 hectares, of which 100 hectares are forests, and the remaining 7 hectares are rocky and sandy areas of the Basitchay River valley (Körner, 2003). The reserve is located at an altitude of 600-800 m above sea level. Plane forests in Azerbaijan occupy 93.5% of the area of the reserve in the Basitchay Valley. Here plane trees can grow from 900m to 1200m above sea level. The total area of sycamore forest in Azerbaijan, 12 km long and 60-200 m wide, is about 120 ha. Plane trees thin out towards the source of the river and spread deep into the territory of modern Armenia for 7-8 km. This plane forest ends near the village of Baharli in the Zangilan region, at a distance of 200-300 m from the confluence of the Basitchay and Aras rivers.

According to some data, in terms of area, plane trees in the Basitchay River valley are ranked first in Europe and second in the world, and the largest plane tree forest in the world is located in North America - Canada. However, this opinion is not supported by scientific evidence.

It should be emphasized that the Armenian invaders brutally destroyed the giant plane trees, which have no analogs in Europe. They opened a woodworking workshop for plane trees near the village of Razdara, Zangilan region. The workshop worked without interruption and produced furniture materials from sycamore, walnut, and oak growing in the surrounding forests. The area was mined and burned to hide the looting of the forest. At the same time, the Isfahan Armenians built a new $100 million woodworking plant in the Muganly village of the Zangilan region. Although the raw material base of the plant is trees floated across the Araz River, studies have shown that the main raw material was the forests of Zangilan and other occupied territories. And of course, the main blow falls on the plane trees, which are the kings of trees. According to the "Bank-Information" of the International Center for Strategic Research on Combating Terrorism and Corruption on the territory of the reserve with an area of 107 hectares located on the territory of the Zangilan region, the plane tree forest is almost or completely destroyed or partially sold to Iranian furniture factories and other construction companies. As a result of the deployment of Armenian troops on 42 hectares of the reserve in this area, plane trees were completely destroyed here. In 2000, 70 plane trees were sold from the territory of the reserve to the governor of Tehran for $100 each. 110 plane trees were uprooted and replanted on the shore of Lake Goycha (Sevan) and in the vicinity of the city of Yerevan.

5. Conclusion

Using the (ETM + Landsat (4, 5, 8)) coefficient from ArcGIS and multispectral satellite photos we studied the degree of the plant covering in 1987-2017 (Yashina, 1960). As a result of our investigation in connection with the zone appropriation the zones which are weakly covered in 2017 in comparison with 1987 decreased by 24%, an average-1,7% rose, and the zones covered with the dense plant cover reduced by 30,4%.

As a result of the investigative zone appropriation, it is important to keep definite agro-technical orders during the utilization for not getting the highest value of these changes occurring in a covering degree of the plant cover. Forests in which the plant cover is dense must be prevented from cutting with the different aims, shift grazing rules must be obeyed during the utilization from summer pastures, hayfields in cattle-breeding, growing the new forage plants including the other agro-technical rule should be obeyed. If these rules aren't obeyed during the zones use then covering degree with the dense plant will be 50% after 50 years.

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