

DESCRIPTION OF SANDY AREAS OF FERGANA VALLEY

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Abstract

This article provides a general description of the sandy areas located in the southwestern part of the Fergana Valley. Geomorphological features, climatic conditions and biological diversity of sandy areas were studied. Also, ecological problems arising as a result of anthropogenic effects are considered. The results of the research show that it is necessary to take the necessary measures in the sustainable management of sandy areas, to strengthen environmental monitoring and to fight against soil erosion. Maintaining the natural balance of these areas is ecologically and economically important

Keywords: Ferghana Valley, sandy areas, geomorphology, ecological balance, anthropogenic impact, soil erosion, ecological monitoring, sustainable management.

Introduction

Fergana Valley is one of the largest and densely populated regions of Uzbekistan. This valley occupies a geographically special place in Central Asia and has many geomorphological features. Sandy areas in the Fergana Valley are considered one of the most interesting natural objects of the region, their formation and development is under the influence of natural processes, climate and anthropogenic activity.

Sandy areas are mainly located in the southern and southwestern parts of the valley, and these areas are characterized by dry desert ecosystems. They were formed as a result of erosion and deflation processes formed in arid climate. This article aims to give a general description of the sandy areas of the Fergana Valley, to study their natural-geographical and ecological features, and to analyze the human impact on these areas.

Also, the article examines the changes in the ecological balance in sandy areas and the changes occurring as a result of these processes. This study sheds light on the important aspects of the sandy areas of the Ferghana Valley and offers recommendations for their future ecological and economic development.

Materials and Methods

and southwestern regions of the Fergana Valley were selected for this study. These areas were formed as a result of erosion and deflation processes in a dry climate. The purpose of the research is to study the natural and ecological characteristics of sandy areas, as well as how they are changing as a result of anthropogenic influences. The following methods were used during the research:

is important in identifying sandy areas and understanding their geomorphological features. Using this method, it is determined that the sandy areas of the Fergana Valley are mainly located in the southern and southwestern parts. Topographical and geomorphological maps of the area were used



in this study.

- Topographic maps are used to determine the relief of sandy areas, i.e. elevations, depressions, ridges and dunes. Through them, information was obtained about the width and thickness of sandy areas, as well as the distribution of deposits.

- Geomorphological maps made it possible to study the processes affecting the formation of sandy areas (for example, erosion, deflation). These maps make it possible to determine how the sand zones were formed, in what period they passed through the stages of formation and changes in the natural landscape.

With the help of cartographic analysis, the boundaries of sandy areas, their morphological structure and their ecological changes are observed, which serves as the main source for creating a natural-geographical description of the region.

- Analysis of climate data plays a key role in understanding the natural processes in the sandy areas of the Fergana Valley. Sandy areas mainly have arid and semi-desert climatic conditions, which are closely related to indicators such as wind, temperature, precipitation. In the course of the study, climate indicators affecting the sandy areas of the Fergana Valley were studied:

- Temperature: The annual average temperature is very high in the sandy areas of the Fergana Valley, exceeding 40°C in the summer months. A sudden rise in temperature in summer reduces the amount of moisture in the soil and promotes the formation of sand dunes. During the winter months, temperatures can drop below 0°C, but even during this period, desert areas are generally dry.

- Precipitation: The sandy areas of the Fergana Valley have very little precipitation, the amount of annual precipitation does not exceed 150-200 mm. Most of the precipitation occurs in spring and autumn. Low rainfall keeps the soil dry and prone to erosion, leading to the formation and spread of sand dunes.

- Wind speed: Wind plays a big role in the formation of sandy areas. The average wind speed in the Fergana Valley is 3-5 m/s, but strong winds occur from time to time. The wind moves sand, changes its location and accelerates the processes of dynamic formation of sandy areas. This process leads to the spreading of sand layers as a result of deflation.

these climate indicators help to create a broader picture of the formation and development of the sandy areas of the Fergana Valley. The arid and hot climate favors the continuous formation of sand dunes, and the winds are an important factor in redeploying the sands and accelerating erosion.

- Ecological monitoring is aimed at studying the state of biological diversity and plant cover in the sandy areas of the Fergana Valley during the research process. Sandy areas are usually inhabited by plants and animals adapted to dry climatic conditions, where the ecological balance is very sensitive. Through this monitoring, the natural ecosystems in the area and the changes related to them were observed.

Biological diversity

Biodiversity living in the sandy areas of the Fergana Valley consists largely of species adapted to the dry desert ecosystem. The animals and plants present in these areas have adapted to the harsh climate conditions, but the anthropogenic effects on the area have a negative impact on their living conditions.

- Fauna: The sandy areas are mainly home to reptiles, small rodents, and some desert bird species. Lizards and snakes are common among reptiles, which are well adapted to hot and dry conditions. Rodents live in burrows under the soil, which protects them from extreme temperatures and drought.

- Vegetation: Plants growing in sandy areas should be drought and salinity resistant. Saharan acacias, wild wormwood, desert gorse and a number of other freshwater desert plants are common in this area. They can survive in dry conditions by taking water from deep layers through their root



systems.

Vegetation status

Vegetation in sandy areas plays an important role in maintaining the ecological balance, because they protect the soil from erosion and prevent the migration of sand. During the study, the reduction of the vegetation cover in this area and the ecological damage caused by the improper management were observed. Vegetation is limited, and vegetation is declining as a result of human activities, such as cattle ranching and improper land use.

Monitoring results

As a result of ecological monitoring, it was found that natural ecosystems in sandy areas are under great threat. Animal husbandry, improper irrigation of lands and infrastructural constructions carried out by humans lead to disturbance of natural balance. Deterioration of vegetation cover increases soil erosion and causes expansion of sandy areas.

These observations require the introduction of sustainable environmental management systems in the area. Practical recommendations should be developed to restore vegetation cover, plant desert-resistant plants, regulate livestock and reduce inappropriate land use.

Results

have unique geomorphological features and were formed as a result of Aeolian (wind erosion) processes. Sandy areas located in the southwest of the valley are dynamically developing under natural and anthropogenic influences. The main geomorphological and ecological features of these sandy areas are described below.

- Geomorphological features: The large geomorphological forms of the sandy areas of the Fergana Valley were formed as a result of wind erosion. Large sand dunes, shifting sand dunes, and deflation cavities are common in these areas. Depending on the strength and direction of the wind, the location of the sand mass changes from year to year. This process depends on natural climatic conditions, in particular, wind speed and direction. Areas that are resistant to erosion are more likely to be covered by shifting sands, which can cause environmental damage.

are mainly sandy loam with very low water holding capacity. Due to the sandy composition of the soil and lack of water, the plant cover is limited. The process of salinization has increased in some areas, which complicates the growth of plants. Soil degradation continues along with erosion and deflation processes.

- Climatic changes: Sandy areas are very sensitive to climatic conditions, where there are sharp changes in temperature and very little precipitation throughout the year. Due to the low average annual rainfall, these areas consist of arid and semi-desert ecosystems. Hot summer and cold winter conditions have a major impact on soil and plant cover.

- Biodiversity: The flora and fauna of sandy areas consists of species adapted to dry conditions. Plants such as Saharan acacias, wormwood, and desert gorse are able to survive in desert conditions through their ability to draw water from underground. The animal world is represented mainly by reptiles, birds and small rodents. But anthropogenic influences and deterioration of ecological conditions are reducing biological diversity.

- Anthropogenic impacts: Human activities such as cattle ranching, improper land irrigation, and infrastructure construction have a significant impact on these areas. Soil erosion and reduction of vegetation cover has been accelerated by anthropogenic influences. The reduction of vegetation in sandy areas has a negative effect on the quality of meadows and pastures, and increases land desertification.

are ecologically vulnerable, and special ecological management measures are required to ensure the stability of flora and fauna.

Summary

The sandy areas of the Fergana Valley are one of the important regions with unique geomorphological and ecological features. These regions were formed in the arid climate, and the flora and fauna in them developed to a limited extent. Due to climate changes and increasing anthropogenic influence, the natural balance in these areas is disturbed. Therefore, measures such as controlling sandy areas through environmental monitoring, combating soil erosion, and introducing sustainable technologies to increase land productivity are important.

Preservation of the sandy areas of the Fergana Valley is of great importance not only in preserving the ecological environment, but also in ensuring economic stability. Preservation of ecosystems around sandy areas helps ensure soil fertility, increase agricultural efficiency and rational use of natural resources.

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