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ECOLOGICAL AND BIOGEOGRAPHICAL ANALYSIS OF KYZYLKUM PLANT SPECIES IN THE ENVIRONMENT OF THE CITY OF NUKUS

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ANNOTATION

The article deals with the ecological and biogeographic analysis of plant species of Kyzylkum in the vicinity of the city of Nukus. In the course of the study, changes in the vegetation cover were established, caused by natural evolutionary laws, as a result of biomorphological transformations of plant species from various ecological groups in the desert.

KEYWORDS: *process, desert, transformation, bio morphology, ecosystem, anthropogenic load.*

In the world, the protection of biodiversity is one of the global problems, the scale of which has been increasing in recent years with an increase in anthropogenic pressure on natural ecosystems. The decisive role in the formation and transformation of the flora of a given territory is played by the tendency of flora objects located in an arid territory to the effects of desertification. In this regard, the establishment of the composition of the components of the flora, the ecological analysis of the changes occurring in them and the study of the characteristics of adaptation are of great scientific and practical importance.

In the world, much attention is paid to assessing the ecological state of flora objects formed in arid territories and their protection. In particular, the composition and ecological characteristics of the flora representatives, widespread in arid territories, have been identified, their database has been created, species with economic value have been brought into production, and effective methods have been introduced to preserve endangered population species. It should be emphasized that the increase in regressed areas in arid territories as a result of human activity requires a large-scale analysis of the ecological state of plant species, which are changeable elements of the natural ecosystem.

In recent years, the strengthening of urbanization processes, the intensification of road construction and the expansion of geological exploration work in the territory of Kyzyl Kum,

characterized by a peculiar flora, are causing the transformation of the flora of this territory and the ecological crisis. And this requires the determination of the current state of plant species in the specified area and the protection of endangered species. Taking this into account, the determination of the ecological state of the representatives of the plant world, their adaptation to soil and climatic conditions, the introduction of promising species into production against the background of the transformed ones are priority directions in the study of the problem of preserving the biodiversity of natural ecosystems.

When monitoring the current ecological state of natural ecological objects of North-West Kyzyl Kum in the vicinity of the city of Nukus, the diversity of plant species that make up the bulk of the desert ecosystem, their classification, as well as an assessment of the tendency of plants to adapt to the environment by ecological parameters were determined. As you know, each plant species during the period of its historical development adapts to certain soil conditions and forms its own growth conditions in certain rates. Cognition of the adaptation of plant species to growth on certain soils is of great theoretical and practical importance.

71 species of plants widespread in the studied area were divided into the following ecological groups: according to the mechanical composition of soils - 3, according to the amount of salinity in the composition of soils (salt tolerance) - 5, according to the degree of



soil moisture - 5, according to the requirements for plant moisture - 3 (table).

Table
Analysis of plant species of North-West Kyzyl Kum, widespread in the vicinity of the city of Nukus, by main ecological groups

Main ecological groups		Number of species
Associated with the mechanical composition of the soil	<i>Halophyte</i>	24
	<i>Psammophyte</i>	41
	<i>Gypsophyte</i>	6
Associated with the amount of salt in the soil (resistance to salinity) (according to the classification of N. I. Akzhigitova, 1982)	<i>Euhalophyte</i>	12
	<i>Hyperhalophyte</i>	5
	<i>Hemihalophyte</i>	17
	<i>Haloglycophyte</i>	34
	<i>Crinohalophyte</i>	3
Associated with the level of soil moisture (according to the classification of P.A. Genkel, 1982 and T.Rakhimova, 1997)	<i>Euxerophyte</i>	21
	<i>Poikiloxerophyte</i>	11
	<i>Hemixerophyte</i>	17
	<i>Stipaxerophyte</i>	5
	<i>Refugioxerophyte</i>	17
Depending on the needs of plants in water (according to the classification of I.N. Beideman, 1983)	<i>Ombrophyte</i>	31
	<i>Trichophyte</i>	25
	<i>Phreatophyte</i>	15

Over the years, representatives of each ecological group have adapted to peculiar abiotic environmental factors: soil, moisture, climate, the negative effects of atmospheric air - very high temperatures in the summer months and to the conditions of a sharp cold snap in the winter months that occur in arid sandy deserts.

In the course of the study, changes in the vegetation cover were established, caused by natural evolutionary laws, as a result of biomorphological transformations of plant species from various ecological groups in the desert. It is proved that the formation of changes in the pedospheric layer of landscapes in different territories of the sandy desert took place in different forms.

As a result of scientific research carried out by floristic, ecological and geobotanical expeditions, the diversity of higher plants growing in the sandy deserts of Tashkudukkum, located in the vicinity of the city of Nukus, was studied. The role of promising plant species in strengthening mobile sands and dunes around various cities and villages of the Republic of Karakalpakstan has been proven.

In the process of observing nature in different periods of the year, special attention was paid to determining the importance of species of higher plants

dominating in various biocenoses (or a common ecosystem), and widespread plant species in a given area in the formation of biodiversity. It was revealed that these plant species make up the bulk of the vegetation cover.

The results of the analysis give grounds to assert that the majority of plants distributed on the territory of Toshkudukkum are species adapted to growth and development on sandy and saline soils. These plants make it possible to select promising species for use in the development of degraded soils, carrying out phytomelioration works, strengthening mobile sands and dunes.

In order to determine the relationship of each plant species to a specific ecological group, a deep analysis of the materials collected in expeditions and from existing scientific sources was carried out. As a result, according to the growing conditions of the studied 249 species widespread in this area, it was revealed that 203 species are psammophytes adapted to growth on sands, 68 species are halophytes adapted to growth on saline soils, 9 species are gypsophytes adapted to growth on takyr soils, 15 species are tugai plants adapted to growth on saline meadow soils (figure).

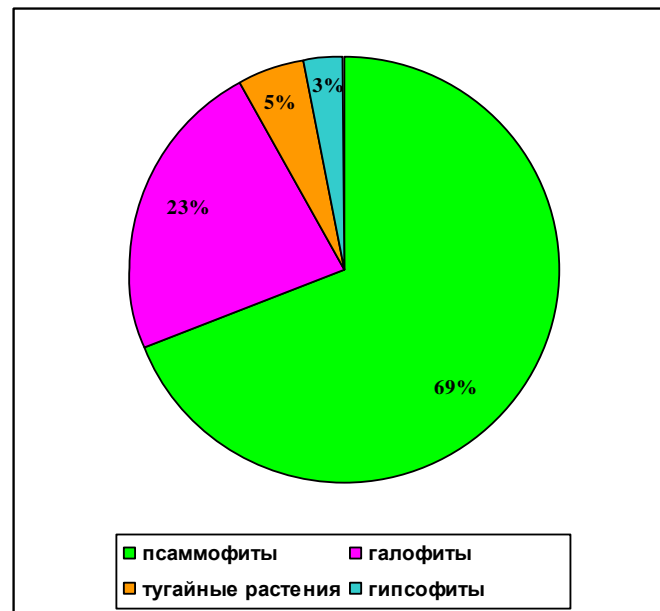


Fig. Distribution of plant species growing on the territory of Tashkudukkum, by soil type

The analysis showed a high degree of adaptation of some species to ecological conditions. In particular, species such as *Haloxylon aphyllum*, *Salsola richteri*, *S.arbuscula*, *S. paulsenii*, *Bassia hyssopifolia*, *Atraphaxis spinosa*, *Astragalus villosissimus*, *Ammodendron conollyi* are adapted to the growth and development on saline soils and saline sands.

The following plant species are adapted to growth and development on salt marshes and soils with varying degrees of salinity: *Bassia hyssopifolia*, *Kochia prostrata*, *Kalidium capsicum*, *Halimostachys belangeriana*, *Salicornia europaea*, *Salsola arbuscula*, *S. palezkiana*, *S.paulsenii*, *S.richteri*, *Haloxylon aphyllum*, *Halimocnemis karelinii*, *Gamanthus gamocarpus*, *Climacoptera lanata*, *Suaeda acuminata*, *S.microphylla*, *Limonium gmelini*, *L.otolepis*, *Tamarix elongate*, *T.ramosissima*, *Nitraria schoberi*, *Lycium ruthenicum* and other/

It was revealed that the following species of the psammophytic group of plants are adapted to growth and development on sands: *Horaninovia anoloma*, *H.ulicina*, *Haloxylon persicum*, *Calligonum acanthopterum*, *C.aphyllum*, *C.aralense*, *C.caput-medusae*, *C.leucocladum*, *Strigosella scorpioides*, *S. turkestanica*, *Leptaleum filifolium*, *L.perfoliatum*, *Chrozophora sabulosa*, *Euphorbia densa*, *Ammodendron conollyi*, *Smirnowia turkestanica*, *Astragalus ammodendron*, *A.lehmannianus*, *Alhagi pseudalhagi*, *Melilotis albus*, *Haplophyllum bungei*, *Zygophyllum oxianum*, *Psammogeton foetida*, *Ferula karelinii*, *Artemisia diffusa*, *A.scoparia*, *A.terrae-albae*, *Cousinia dichotoma*, *Heliotropium arguzioides*,

Arnebia decumbens, *Nonnea caspica*, *Allium sabulosum*, *Carex pachystylis*, *C.physodes*, *Stipagrostis karelinii*, *S.pennata*, *Poa bulbosa*, *Anisantha tectorum*, *Eremopyrum buonapartii*, *E.orientale*, *E.triticeum* and other types.

Kinds *Atraphaxis spinosa*, *Capparis spinosa*, *Astragalus villosissimus*, *Peganum harmala*, *Convolvulus divaricatus*, *C.erinaceum* grow on gypsum desert soils. Some types of plants are characteristic for tugays, for example: *Typha angustifolia*, *Phragmites australis*, *Halimodendron halodendron*, *Populus pruinosa*.

Thus, it can be argued that most of the plant species widespread in this area are adapted to growth and development on sands and soils with varying degrees of salinity. The indicated local plant species make it possible to select promising species when strengthening mobile sands and dunes in the vicinity of the city of Nukus, reclaiming natural saline soils and degraded fields on which agricultural crops are cultivated, as well as during effective phytoreclamation work.

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