

CURRENT STATE OF FLORA IN THE TUGAI ECOSYSTEMS OF THE ARAL REGION

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In the plants of natural biogeocenoses of the Republic of Karakalpakstan, unique evolutionary-biological and ecological processes occur, associated with environmental changes. In many respects, it can be recognized that this is due to the natural geographic changes taking place in the Central Asian region in recent years and, as a result of its degradation, causes the formation of various biological, morphological and ecological-physiological signs and characteristics in plants. Species growing in natural conditions in the northern regions of our republic.

The anthropogenic impact, which has significantly increased in the last decade, has led to a significant transformation of the vegetation cover, the destruction and degradation of many indigenous zonal communities, their replacement with secondary phytocenoses, simplification of the layered structure, and a drop in productivity. Among the anthropogenic impacts, a significant place is occupied by the recently increased recreation [7].

At present, everyone knows that forests are the main component of the biosphere and play an important role in the formation of favorable optimal conditions for the existence of life on Earth. Preservation of the unique tugai forests in the Amudarya delta today is becoming especially relevant due to the unfavorable environmental situation in the South Aral Sea region.

Tugai forests almost throughout the river. The Amu Daryas accompany its channel and, as it were, are its natural protection. They play an important role in the ecological function of the Amudarya delta, lowering the level of groundwater

and reducing their salinity. Protective forest belts along the rivers contribute to the regulation of the water level and perform a soil protection function [2, 10].

Tugai forests can save up to 80% of the surface water in the rivers and lakes of the surrounding areas and, thus, play a significant role in preventing the siltation of the Amu Darya and its tributaries. In addition, forest thickets provide natural drainage and prevent secondary soil salinization in the area. They significantly reduce evaporation from drainage and irrigation networks, increase the humidity of the lower layers of the air and, thereby, reduce the amount of water needed for irrigation [4,9]. At present, due to the drying of the Aral Sea, the balance of the ecosystem of the Southern Aral Sea region is disturbed, the pressure on natural complexes here reaches extreme strength, anthropogenic desertification and aridization are taking place everywhere. The degradation of the environment has led to the intensification of desertification processes. wind erosion of soil, climate change, gene pool, biodiversity of fauna and flora [1 2, 6]. Tugai of the lower reaches of the Amudarya are characterized by a small number of species composition. So, for example, in Badai-tugay: trees and shrubs make up 17%, perennials - 45.0%, annuals - 32.0%. In other small tugai, it is even less [2, 10].

Depending on the area, the state of vegetation, the level of groundwater, the mode of irrigation by natural and artificial means, they differ greatly in ecological conditions of existence and heterogeneous indicators of flora and fauna. For example, in 1960-1970, 123 species of birds were registered in Badai-tugai in the years of ecological well-being. During these years, there were several shallow lakes around these tugai thickets, regularly flooded during summer floods, which created conditions for rest and feeding of migratory birds [1, 2, 3, 8].

The vegetation cover of the forest biogeocenosis is mainly composed of brown species (*Populus prinosa* Schrenk., *P. ariana* Dode.), which are dominant and reach a height of 5-10 m, a trunk diameter of 50-60 cm, a life expectancy of 50-70 years. Among the accompanying plants in the gardens were elm (*Eleagnus angustifolia* L), willow (*Salix songarica* Anders), various species of holly and (*Halimodendron halodendron* (Pall.) Voss). Tree trunks are surrounded by vines - ivy (*Clematis*

orientalis L.), Siberian cynanchyma (*Cynanchym sibiricum* L.). The grass cover of the groves was also well developed and consisted of branched grasses: gooseberry (*Alhagi pseudalhagi* (MB.) Desv.), licorice (*Glycyrrhiza glabra* L.), broom species (*Calamagrostis epigeios* (L.) Roth., *C. pseudophragmites* (Hall. f.) Kocl.).

With the change in the water runoff of the Amu Darya, the area of gardens and the following tree and plant massifs were eroded: poplar species (*Populus prinosa* Schrenk; *P. ariana* Dode), linden (*Eleagnus angustifolia* L.), willow species (*Salix songarica* Anders; *S. Wilhelmsiana* MB.), and by the 1970s, only 30,000 hectares of forests in the Lower Amudarya delta remained, that is, the forest area decreased by almost 90% over 60 years (Baksiev et al. 1996). In the Amudarya lowland and on the left bank of the delta, entire massifs dried up.

At present, as a result of low water, all lake systems have dried up, watering floodplain tugai in a natural way has become rare and small in area - the species composition of birds, mammals and other representatives of terrestrial vertebrates has sharply decreased [3]. The deterioration of environmental conditions has dramatically affected the floristic composition of mulberry vegetation. As a result, instead of mesophilic herbaceous plants, xerophilic, halophilic plants expand their range.

Forest types of land are divided according to the density of plantings into three types of degree: rare, medium density, dense. The central territory, which includes quarters No. 6,7,8,3,4,10,16, is dominated by karabarak, chingil, comb, which are old thickets with dry dying stems of the past for many decades. Such places occupy more than 1500 hectares.

But in favorable years, when in the high-water years of 1998, 2009, 2010, water reached 30-40% of the territories of the tugai massif, with an area of 2000-2500 ha, these old bushy conditions of the tugai gradually revived. Along the new canal, 10 km long, dense comb thickets appeared and the grassy cover, like amber, grew together and enriched the forage ratio [5]. From the Amudarya River along the old channel of the Kukdarya to the main distribution facility up to 3 km long, the appearance of a young forest, such as turanga, willow, sucker, and successfully

friendly appearance of grass cover: licorice, reed, yantak, etc. Thus, the deterioration of environmental conditions has dramatically affected the floristic composition of mulberry vegetation. As a result, instead of mesophilic herbaceous plants, xerophilic, halophilic plants expand their range. Preservation of the gene pool and biodiversity of the tugai ecosystem of the Amudarya floodplain is becoming a major environmental problem.

In order to preserve at least the existing composition of the species diversity of the tugai ecosystem of the lower reaches of the Amudarya, as an encouraging object of the gene pool and biodiversity reserve, it is necessary to analyze the available material and re-typify the tugai to determine specific places for the possible conservation of the gene pool and biodiversity of fauna and flora and to create a new cadastre of the tugai ecosystem lower reaches of the Amu Darya.

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