ECOSYSTEMS: ECOLOGY AND DYNAMICS, 2022, Vol. 6, No. 1, P. 53-99

STRUCTURAL ORGANIZATION OF ECOSYSTEMS AND PATTERNS OF THEIR DISTRIBUTION

UDC 581.524

"BIOLOGICHESKAYA BALKA" OF BIOSPHERE RESERVE "LAKE ELTON", A BOTANICAL PHENOMENON IN THE SALINE PLAINS OF THE NORTHERN ELTON REGION

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Received Februar 18, 2021. Revised Februar 28, 2021. Accepted March 01, 2022.

In this article we present detailed results of our study of the vegetation cover of the "Biologicheckaya Balka" or "Biological" dry valley, where the largest derivative of a ravine forest of the desert-steppe Trans-Volga region is located. The data on tree-shrub vegetation, soils and groundwater, taken from the stationary drill wells, was collected in different seasons of 2008-2021. The floristic observations were carried out by routing, with trees and shrubs studied along the way during the growing seasons of 2014 and 2018-2021. "Biological" dry valley (length – 850 m, elevation difference – 17 m) differs distinctly from the surrounding saline plains that are formed by the zonal semi-dwarf shrub-bunch grasses desert steppes. Its extremely small territory has intrazonal and extrazonal mesophilic vegetation, an unusually high floristic abundance and phytocenotic diversity. At the valley mouth there are halophytic annual saltwort plants, thickets of reeds, followed by the grass-forb communities with Phragmites australis further above, with meadow and forb-grass communities, and with a specific tarragon and couch grass meadow at the very top. Most of the area is occupied by a tree-shrub massif, located in the middle part of the valley bottom, and by the shrubs-forb-grass steppes on its right slope. In the catchment areas and on the left slope various types of desert and dry steppes are common, close to the vegetation of the flat interfluves. Their vegetation is heterogeneous and mosaic.

We also explain what role the most important environmental factors, such as the level and salinity of groundwater, surface runoff, slope orientation, pyrogenic factor, livestock grazing and erosions, play in the spatial organization and vegetation dynamics. Over the past 50 years the upper border of the closed tree-shrub massif has moved along the bottom of the valley almost 50 m up. The local flora consists of 201 vascular plants species from 44 families, which is about 30% of species and 80% of families of the total number in the Elton Region; including 4 species from the "Red Data Book of the Russian Federation" (2008), and 5 from the "Red Data Book of the Volgograd Region" (2018). There are also 30 or 15% ruderal species.

The materials of this study contribute and help to achieve the main strategic goals of the UNESCO biosphere reserve "Lake Elton", such as the protection and restoration of natural ecosystems, development of scientific researches, ecological monitoring, ecological education, enlightenment and education. They prove there is a need of a protection regime in

the “Biologicheksya Balka”, as well as of fire-preventing and graze-prohibiting measures.

Keywords: Volga-Ural interfluve, Caspian lowland, Elton region, Lake Elton Biosphere Reserve, Eltonsky Nature Park, Khara River, Biologicheskaya Balka, Biological dry valley, tree-shrub vegetation, shrub vegetation, meadow vegetation, steppe vegetation, halophyte vegetation, soils, wildfires, livestock grazing, flora, vascular plants, Red Data Book of the Russian Federation, Red Data Book of the Volgograd Region, monitoring.

Acknowledgments. The authors express their gratitude to the leaders of the State Budgetary Institution of the Volgograd Region “Natural Park ‘Eltonsky’” for their assistance in this study.

Funding. The work was carried out as part of the research work of A.N. Severtsov Institute of Ecology and Evolution Problems of the Russian Academy of Sciences “Ecology and Biodiversity of Terrestrial Communities” (No. 0109-2019-0006), of Forestry Institute of the Russian Academy of Sciences “Factors and Mechanisms of Sustainability of Natural and Artificial Forest Biogeocenoses of the Forest-Steppe Zone and Arid Regions of European Territory of Russia under the Natural and Anthropogenic Transformations” (Government Task No. 0121-2019-0003). It was also carried out in accordance with the Agreement on Scientific Cooperation between Forestry Institute and the Eltonsky Nature Park.

DOI: 10.24412/2542-2006-2022-1-53-99