Regulation of Recreational Loads to Slope Landscapes as the Basis for Sustainable Development of the Territory of the Cheboksary Agglomeration of the Chuvash Republic

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ABSTRACT

The current trend of increasing tourist flows around the world leads to an increase in the recreational load on both natural and man-made landscapes. Due to changes in the general socio-economic situation in Russia, interest in the issues of developing strategies for sustainable development of regions with recreational resources has increased. The natural properties that determine the natural stability of beaches include the properties of the substrate (granulometry of loose deposits, degree of permeability, form of bedding, etc.). The territory is experiencing changes already at the preparatory stages, during the period of technogenic development and, finally, during recreational exploitation. Sustainability is one of the most important factors determining the development paths (changes, and sometimes destruction) of natural complexes. When taking into account the recreational load, it is possible to give a reasonable forecast for the development of a particular recreational territory, and, therefore, save it as a recreational resource for a more or less long time. One of the determining factors of rationing is the magnitude of the ecological potential of the landscape complex, its ability to self-clean, resistance to certain types of recreational, and with multifunctional use, to the whole complex of anthropogenic loads. It is necessary to analyse the structure of the recreational use of landscape complexes because certain types of recreation differ in technological features and the requirements of the psychophysiological comfort of the recreational process, have an uneven load in terms of duration and type of impact.

The territory of the city of Cheboksary and the Volga suburbs is divided into the right-bank and left-bank parts. According to the physical and geographical division, the right bank is part of the forest-steppe landscape zone located in the province of the Volga Upland, in the Cheboksary elevated physical and geographical area with a mature erosion landscape. The left bank (Trans-Volga) of Cheboksary and its suburbs is part of the sub-taiga landscape zone, the southern border of which runs along the river Volga. The most common landforms on the left bank (Zavolzhye) are parabolic dunes on the Volga terraces, which reach a length of 1-2 km, a height of 10 meters and a width of 200-250 meters. Thanks to this, skiing and sledging, snowmobiling over rough terrain with weak loads on the body are possible in winter. For the left bank of the city of Cheboksary and the suburbs, the density of the ravine-beam network does not exceed 0.4 km / km^2. The steepness of the slopes 3-5^o.

The following types of landscapes in range of terrain in the study areaare observed: 1) watershed terrain; 2) the valley type of terrain of small rivers; 3) the slope type of terrain on the right bank of the river Volga (Cheboksary reservoir); 4) floodplain-terraced terrain. Slope type of terrain along the right bank of the river Volga is located in the Moscow and Kalinin districts of Cheboksary, has a slope of 3^o or more, with washed away soils, broad-leaved forests (relict upland oak forests), which have undergone significant information.

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Directly in the coastal area of the river Volga, where mainly abrasion-landslide and abrasion-talus processes develop, the main types of tracts are identified:

1) abrasion-landslide ledges on the root slopes of the Volga Valley with a steepness of 60º, a height of more than 15 m by constant wetting as a result of seepage underground;

2) abrasion ledges of floodplain terraces with a 2 m height;

3) abrasion ledges of the root slope of the Volga valley with a height of more than 2 m, with characteristic abrasion niches in the lower part of the slope or a temporary accumulation of collapsed material.

For recreational use, the lithological and geomorphological characteristics of the coastal zone play an important role. The combination of high abrasion banks with landslide phenomena and ravine erosion along the right bank, and shedding and flooding along the left banks of this reservoir negatively affects the structure of recreational use of the study area. Active exogenous processes are landslides in the upper part of the slope, which is facilitated by the steepness of the slopes (15-20º) and their lithological structure. There are up to three large landslide steps with a landslide-warped forest. Such sites are observed in the northwest of the Volga slope in the area of Novoselsky beach and are expressed by the destruction of the asphalt path on the descent to the beach.

The key recreational areas are located on the territory under consideration: "Park of the 500th anniversary of the city of Cheboksary" and Ethnocomplex "Amazonia", ski resort "Vertical" - with an inclined surface with a crossed relief within the slope of the northern exposure. The recreational load in the park is not uniformly distributed, so the marginal sections of the park have an increased load of more than 40 people/ha/day. Therefore, tropic degradation of living ground cover is characteristic of oak forests. Therefore, tropic degradation of living ground cover is characteristic of oak forests. As the anthropogenic load intensifies, the path network begins to merge into a single trodden area with a petrified surface that does not perceive any more vegetation. At the same time, the stand itself experiences significant oppression. The left bank of the city of Cheboksary The Volga region experiences a strong recreational load, especially in the warm season. The anthropogenic impact on the plant cover leads to the disappearance or sharp decrease in the abundance of plants. Plants unstable to trampling suffer. Soil compaction and desiccation, disturbance of its structure, reduction of air and moisture capacity, soil washout on inclined areas, weathering of sandy soils. Forest plant species are gradually giving way to forest meadow and meadow. The ability of trees to self-renew is weakened; undergrowth and undergrowth thin out and die as a result of large recreational loads reaching 8-12 people per 1 ha daily with a permissible 1-2 people/ha.

Changes under the influence of recreational activities are primarily affected by topography and vegetation. Knocking out grass on low terraces, vacationers create “man-made” beaches; the frequency of formation of paths on the coastal slopes leads to their shedding or creeping. Subsequently, intensive coastal processing occurs, associated with increased excitement of the water surface during the passage of motor vessels. Vacationers trample down the grass cover, cut the forest, and the destruction of aquatic coastal vegetation leads to a change in coastal fauna.

Currently, recreants actively use the landscapes of the Cheboksary agglomeration of the Chuvash Republic, and this fact requires the adoption of serious environmental measures and the creation of tourist and logistics (information) centers (TICs) to regulate recreational flows, especially in the summer. On the slope landscapes of recreational clusters, as the most vulnerable and subject to natural and technological risks, it is necessary to carry out landslide measures including monitoring of slope processes, engineering strengthening of potentially dangerous slopes, as well as distribution of recreational flows.

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