

Comparative Analysis of the Under-Canopy Spruce Populations Structure in Birch Forests in Southern Taiga Subzone and Mixed Forests Zone of the Russian Plain

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Keywords: southern taiga, coniferous-broadleaved forests, birch forests, under-canopy populations of spruce, structure of forest stand

Researches of recovery processes in natural post-disturbance birch forests with under-canopy spruce population are actual in connection with an increase in the area of such stands, a decrease in the volume of tending felling in young stands, and insufficient knowledge of the process at the later stages of development of birch forests. The purpose of this study is to make a comparative analysis of the under-canopy spruce populations in birch forests, the age of which approaches age of natural maturity, for the conditions of the southern taiga and the mixed forests. The objects of research are birch forests at the age of 105 years with a under-canopy population of spruce. The works were carried out on permanent trial plots in the Moscow region, Mozhaisk district, and in the Yaroslavl region, Rybinsk district.

For all the spruce trees age was determined, biometric characteristics were measured, the presence of rot was determined selectively when taking cores.

It is established that the regeneration of spruce under the canopy of birch forests in the southern taiga and coniferous-broadleaved forest areas occurs according to similar scenarios. The basis of spruce trees formed under the canopy is a generation that appeared in birch forests under the age of 30 years. Another representative spruce generation appears when the birch trees reach the age of more than 70 years. By the beginning of the decay of birch forests (120 years), the spruce populations in these forest areas are characterized by approximately the same age and vertical structures.

Despite some differences in the absolute values of the characteristics of spruce populations caused by the climatic conditions of growth, it can

be stated that the process of natural spruce regeneration in the birch forests of the southern taiga and the mixed forests proceeds according to the same patterns determined primarily by the biological features of the growth and interaction of birch and spruce. Climatic conditions are of secondary importance. In these regions after decay of birch forests, low-density, low-productivity spruce forests with high probability are formed.