

FORMATION OF KOREAN PINE (*PINUS KORAIENSIS* SIEB. ET ZUCC.) POPULATION MOSAIC IN KOREAN PINE-BROADLEAVED FOREST IN THE SOUTH OF THE RUSSIAN FAR EAST

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Abstract. *Background.* The study of natural drivers that determine spatial distribution, number and coexistence of species, is one of the important tasks of ecology. For trees, these factors are reflected in the structure of population mosaics. The purpose of the work is to describe the dynamics of the mosaic structure of Korean pine trees (*Pinus koraiensis* Sieb. Et Zucc.) as they pass the stages of ontogenetic development and to find which factors determine the species structure at different stages. *Materials and methods.* The study was performed in a mixed Korean pine-broadleaved forest in the southern part of the Sikhote-Alin mountain range. The data were obtained on two permanent sample plots of 1.5 and 10.5 hectares, where the stand was stem-mapped (including 2054 *Pinus koraiensis* individuals). Analysis of the population mosaic structure was performed using the pair correlation function $g(r)$, the function $K_2(r)$, the function of the spherical contact $H_3(r)$ and the distribution of distances to the k th neighbor $D_k(r)$. *Results.* Distribution of *Pinus koraiensis* trees when they pass the stages of ontogenetic development change from aggregated to random. The aggregated distribution of individuals is not associated with a certain type of substrate and the interaction of plants with each other. There are few positive interspecific associations between juvenile and immature individuals of *Pinus koraiensis* and individuals of other dominant species, the number of positive associations increases in the virginal state, but then in the generative state they are replaced by negative ones. The average radius of groups of individuals in different ontogenetic states is similar and approximately coincides with the average size of canopy gaps. *Conclusion.* The study has shown that dynamics of the mosaic structure of *Pinus koraiensis* individuals during their passage through the stages of ontogenetic development does not depend on intraspecific and interspecific interactions. Positive associations are due to similar requirements for the conditions necessary for growth. First of all, individuals need light, a sufficient amount of which they can obtain only in gaps. This explains the aggregated location of individuals, as well as the nature of changes in interspecific associations. Only few individuals remain from the groups to the generative state, therefore their location is random. Negative interspecific associations between generative individuals are due to their interaction, and therefore they appear at distances close to the radii of the crowns.

Keywords: *Pinus koraiensis*, population pattern, point pattern analysis, null model, species interaction, spatial structure, Korean pine-broadleaved forest, Russian Far East.