POSSIBILITIES OF GIS FOR STUDYING THE PROCESSES OF DISTRIBUTION OF THE USSURIYSK POLYGRAPH IN THE FIR FORESTS OF SIBERIA

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In recent decades, the Siberian fir forests have been seriously damaged by the invasive bark beetle of Far Eastern origin, the Ussuri polygraph *Polygraphus proximus Blandf.* The damage from the impact of the pest is expressed in monetary value and in the loss of many ecological functions of forest ecosystems. Technologies for organizing ground monitoring of the spread of the pest are successfully tested by Siberian scientists, and with the involvement of GIS technologies, they can provide a spatio-temporal analysis of the scale of the negative processes occurring. The purpose of this article is to show the capabilities of GIS technologies in combination with remote sensing in studying the processes of invasion of the Ussuri polygraph using the example of forest areas in the Tomsk region. It is shown that the geoinformation approach to the study of the fir forests state in the centers of mass reproduction of the pest makes it possible to create a series of thematic maps reflecting large-scale spatial and temporal changes in plantations and to give a short-term forecast of the development of the centers. The high efficiency of this approach is shown in the local analysis of the centers' development and to assess the dynamics of mass reproduction of the pest at the forestry level. Based on the built-in analytical information and cartographic display, it becomes possible to predict the emergence of new centers, monitor and control their development.

Keywords: Ussuri polygraph, Siberian fir trees, GIS technologies, mapping, breeding center, forest monitoring, remote sensing, forest pests, forecast

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