

PRODUCTIVITY AND CONTENT OF MACRO- AND MICROELEMENTS IN THE PHYTOMASS OF GROUND VEGETATION OF TYPICAL AND UNIQUE TAIGA FORESTS OF THE NORTHERN URALS (EXAMPLE OF SPRUCE-FIR FORESTS OF THE PECHORA-ILYCH NATURE RESERVE)

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Abstract. Most woodlands of the Northern Eurasia are represented by bilberry-green moss spruce-fir forests. At the same time, a tall herb type of spruce-fir forests that occupies a much smaller area was identified and described. The objective of this work is to evaluate and compare the species richness and productivity of the ground vegetation of tall herb spruce-fir (unique) and bilberry-green moss spruce-fir (typical) forests of the Northern Urals. Based on previous studies, two forest types were selected in the foothill part of the Pechora-Ilych nature reserve with tall herb and bilberry-green moss ground vegetation, where total mapping, determination of microsite area and geobotanical descriptions had been carried out previously. Material for determination of the above-ground and below-ground phytomass and chemical composition of plant species was collected in 2017–2018. The concentrations of C and N in plant samples were measured on the elemental analyzer, and Mg, Al, P, S, Cl, K, Ca, Fe, and Zn content was found using the method of measuring mass fraction of the element in powder samples by X-ray fluorescence analysis. It was found out that the total phytomass of vascular plants in the ground vegetation of tall herb forests is 5 times higher than that of bilberry-green moss forests. The phytomass of mosses, on the contrary, is 4.4 times lower in tall herb forests in comparison with bilberry-green moss forests. Examination of ecological-coenotic groups of plants in terms of the content of chemical elements taking phytomass in consideration shows that the greatest contribution to the accumulation of macro- and microelements in the tall herb spruce-fir forest is made by the plants from tall herbs, boreal dwarf shrubs and boreal small herbs groups; in the bilberry-green moss spruce-fir forest, the main role is played by mosses and boreal dwarf shrubs. To assess the content of biogenic elements in the ground vegetation a differentiated approach was suggested, which included accounting for above-ground and below-ground phytomass by ecological-coenotic groups of plants within different types of microsites.

Keywords: boreal forests, biodiversity, tall herb spruce-fir forests, bilberry-green moss spruce-fir forests, microsites, above-ground phytomass, below-ground phytomass, ecological-coenotic groups of plants, macroelements, microelements, ground vegetation.

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