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Primeval Beech Forests

Reference Systems for the Management and Conservation of Biodiversity, Forest Resources and Ecosystem Services

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Abstracts



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Programme Oral Presentations and Short Communications

Monday, June 3

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Monitoring of Soil Microbial Coenosis in Primeval Beech Forests

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Soil microorganisms are very sensitive reagents on influence of external factors, therefore they can be used for monitoring researches. Studies of soil microbiota were conducted in virgin beech forests of Shyrokoluzhansky massif of Carpathian Biosphere Reserve. The purpose of the research was to determine the number of different ecological-trophic groups of soil microorganisms, biological activity and phytotoxicity of soil, intensity of microbiological processes by index of pedotrophity and oligotrophity. It was found the proportion and the number of different ecological-trophic groups of soil microorganisms changes with altitude. So the number of ammonificators with increasing of altitude above sea level was reduced. The soil at altitude of 1100 meters above sea level was characterized by minimum content of organotrophes – 1,22 mln. (CFU-colony forming units/1 g.a.d.s). At altitude of 500 meters content of ammonificators increased six times and was 7,07 mln. CFU/1g.a.d.s., which indicates to accumulation of the soil organic matter. Similar changes occurred with the number of bacteria which are using mineral forms of nitrogen for their nutrition. Their maximum quantity (4,32 mln. CFU/1g.a.d.s) was in the soil of biotope disposed at altitude of 500 meters above sea level. Fluctuations in the number of soil micromycetes of virgin forest ecosystems have not been as significant as the bacterial microbiota (within 17000–28000 CFU/1g.a.d.s.). On altitude of 500–800 meters biodiversity of micromycetes was higher in comparison with other control points of sampling. Virgin forests are unique ecosystems, which can be used as etalon for basic monitoring. Functional diversity of soil microbial communities determines conditions of growth and development of flora and fauna. Being the important component of ecosystem, microbial coenosis of soil is involved in the regulation of homeostasis. Investigation and preservation of diversity of native soil microorganisms is very important aspect, which unfortunately is not given due attention.

Keywords: Microorganisms, soil, biodiversity, beech, monitoring.