

Characteristics of algocenoses of small water reservoirs at the territory of the National Park "Nizhnyaya Kama" being influenced by oil production

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Abstract

There was investigated chemical composition of water and bottom sediments as well as characteristics of algocenoses (number of species, population, biomass, saprobity index, Shannon index for population and biomass) in 8 water reservoirs at the territory of the National Park "Nizhnyaya Kama" (the Republic of Tatarstan, Russia). The water reservoirs under investigation are polluted with oil as a result of accidental spills at time of its transportation and production which has been carried out at the water shed area since the sixties of the 20th century. Oil products accumulation in bottom sediments was revealed, their content in sediments exceeded the content in water by 47-889 times. There were determined dominant complexes of algae species depending on the range of oil products content in water and bottom sediments. A response reaction of algae to high oil products concentration in water (0.48-1.44 mg/l) and bottom sediments (9137-17780 mg/kg) is expressed by reduction of species diversity and decrease of quantitative characteristics of algae up to complete disappearance. Through a correlation analysis there was identified a dependency between algal community indices (number of species, biomass, Shannon index for population) and a content of nutrient substances (ammonium salts, nitrites) as well as of ferrum. No significant correlation dependencies between oil products content in water, bottom sediments and the algal community indices were revealed.

Keywords

Algae, Algocenosis, Phytoplankton, The kuibyshev water storage basin, The national park "nizhnyaya kama", Vegetation