

Spatial Heterogeneity of Sediment Composition and Phosphorus Fractions in Sediments from the Kardzhali Reservoir, South-East Bulgaria

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Abstract: The differences in the phosphorus sorption characteristics and phosphorus fractions were studied between the riverine, transitional and lacustrine zones in the Kardzhali Reservoir. The dry mass and the loss on ignition were measured. The maximum sorption capacity (P_{MAX}), the adsorption/desorption equilibrium concentration ($L_{A/D}$), the initial surface adsorbed phosphorus (Po) and P-saturation (P_{SAT}) of sediments (Po/ P_{MAX} ratio) were evaluated using Langmuir isotherms. The particle size distribution was determined by wet sieving and the sediment fractionation was made according to the Psenner and Pucsko method. Pronounced spatial heterogeneity of all studied parameters was observed along the reservoir. The role of the sediment input and redistribution in the reservoir for the chemistry of the bottom sediments, as well as for the formation of anoxic core in the transitional zone was shown.

Key words: nutrients, grain size, fractionation, sorption characteristics.