# ASSESSING THE HEAVY METALS CONTENT FROM AQUATIC COMPLEX GORGOVA UZLINA FROM THE DANUBE DELTA, ROMANIA

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**Abstract:** *Through this study we aimed to evaluate and determine the accumulation of heavy metals content in aquatic complex Gorgova - Uzlina, located in the western part of the Danube Delta Biosphere Reserve, between the arms Sulina and Sfantu Gheorghe.*

*In order to evaluate heavy metal content there were selected a total of 3 lakes: Isac, Uzlina and Cuibul cu Lebede, considered representative for this aquatic complex. We determined the concentrations of five heavy metals (chromium, nickel, lead, manganese and zinc) with significant impact on the health of ecosystems, from sediment samples and two species of aquatic vegetation specific to wetlands, namely: Phragmites australis and Typha angustifolia. Monitoring activity in the aquatic complex Gorgova-Uzlina was conducted over a period of 5 years. The frequency of sampling was seasonal (spring, summer, autumn), three times a year on each lake and in the same station during the mentioned period. For statistical analysis there were considered average annual values.*

*Based on the results obtained, it is observed that the maximum permissible concentrations were exceeded according to the European Water Frame Directive and changes in concentrations of heavy metals are influenced by the significant contribution of upstream Danube input, loaded with various types of pollutants resulted from industrial and agricultural activities.*

**Keywords:** *heavy metals, water quality, aquatic vegetation, Danube Delta*

## 1. Introduction

Ecological status of water bodies represented by aquatic systems associated with surface waters is one of the main concerns of the European Water Framework Directive. From the chemical point of view, a good ecological situation of a surface water body is defined when the concentrations of pollutants do not exceed the quality standards [1, 2]. The aquatic complex Gorgova – Uzlina is part of the fluvial delta, it is in the southern side of the Danube Delta, covering all the area between the arms Sulina and Sf. Gheorghe until the connection with the hill Caraorman [3]. The total surface of the complex is 25.159 ha, surface from which 5845 ha is occupied by waters, it is the fifth complex as surface from all the natural complexes in the Danube Delta Biosphere Reserve.

This aquatic complex shows two gravitation centers, of maximum depth, one in the area of Gorgova lake, the largest lake in the complex with the surface of 2625 ha and a depth up to 3,24 m at the same time being one of the most important lakes in the Danube Delta, and the second in the area of Isac and Uzlina lakes. In