

HEAVY METAL BIOACCUMULATION IN MARINE ORGANISMS FROM THE ROMANIAN BLACK SEA COAST

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Abstract. Similarly to other European seas, the Black Sea ecosystem has undergone severe changes in all its subsystems immediately after 1970, as a consequence of industrialization and intensive agriculture, resulting in eutrophication and other types of pollution: waste water discharges, oil spills, pesticide contamination, radioactive substances, heavy metal contamination etc. Heavy metals, one of the main pollutants reaching the Black Sea, are deposited in the various components of the aquatic environment (water, sediment and biota) and can be accumulated through the food chain in aquatic systems. Bioindicator species are ideal for monitoring and the most appropriate for the marine environment are considered mollusks, as filter-feeders. However, other marine species, such as algae, crustaceans and fish, have been used as indicators of contamination. Fish species living close to the seabed such as Syngnathids are more exposed to heavy metals than pelagic species, due to the fact that metals tend to accumulate in the substrate. This paper focuses on the bioaccumulation of heavy metals (Cu, Cd, Pb, Ni, Cr) in two species of Syngnathids from the Romanian shallow waters: the long-snouted seahorse (*Hippocampus guttulatus*, Cuvier 1829) and the greater pipefish (*Syngnathus acus*, Linnaeus 1758), compared to heavy metal concentrations recorded in the surrounding water and sediments, expressed by the Bioconcentration Factor (BCF) and the Biota-Sediment Bioaccumulation Factor (BSAF). For comparison reasons, the concentrations recorded by other fish and mollusk species from the same sampling areas are presented.

Key words: Syngnathidae, benthic species, heavy metals, biomonitoring, Bioconcentration Factor (BCF), Biota-Sediment Bioaccumulation Factor (BSAF).

Introduction

Given then capacity of marine organisms to accumulate via various pathways the heavy metals in the environment (in water, sediment or food), their use as bioindicators of marine pollution is supported by many examples. Mollusks have been considered the ideal species, due to their filter-feeding technique which allows them to interact with huge volumes of seawater, resulting in accumulation of pollutants. Consequently, extensive research has been