

Condition Index of Mussel *Mytilus galloprovincialis* (Lamarck, 1819) as a Physiological Indicator of Heavy Metals contamination

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Abstract

The condition index (CI) is an ecophysiological indicator used to assess the response of mussels at different environmental pressures. The present paper aims to assess the heavy metals contamination of three polluted sites (Midia Port, Constanta Port, and Mangalia Port) and one reference site (2 Mai), using indigenous mussels *Mytilus galloprovincialis* as bioindicators of pollution. The concentrations of heavy metals (Cu, Cd, Pb, Ni, and Cr) in mussels' tissues, seawater and sediments from the 4 studied areas were evaluated in order to find a possible correlation with the physiological index (condition index) of the mussels. For this purpose, the condition index, Bioaccumulation Factor (BAF) and Biota-Sediment Accumulation Factor (BSAF) have been assessed and related to seasons and location. The study showed that mussels can bioaccumulate elements such as Cu, Cd, Pb, Ni, and Cr, certain differences being reported between sampling sites and season. Condition index showed a very significant correlation with heavy metals concentration in mussels (Cu, Pb, and Ni), with BAF (Pb) and with BSAF (Cd, Ni, and Pb). Also, CI correlates significantly with Cd concentration in seawater and Cr content in sediments. The highest values of CI and heavy metal concentrations were highlighted in mussels collected from the most polluted sites. Thus, any significant seasonal correlation between condition index and metal concentration in mussels may be related to food availability and the level of pollution in the studied sites.

Keywords: condition index, physiological indicator, heavy metals, bioaccumulation, *Mytilus galloprovincialis*, Romanian Black Sea coast.

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