



MARINE BENTHOS- CONTAMINANTS RELATIONSHIP: DIVERSITY OF IMPACTS AND PROTECTION REGIME ALONG THE LATIUM COAST

PhD Student: Monfardini Eleonora

Supervisor: Prof./Dr. Maria Flavia Gravina/ *Co-supervisor:* Prof./Dr. Andrea Novelletto

38th Cycle - A.Y. 2022/2023

Environmental pollution is one of the biggest problems that humanity will have to face, due the degradation of the environmental quality status and ecosystem functioning. Unfortunately, most contaminants are widely dispersed and even the protected areas do not have protection from contaminants coming into them.

The Presidential Estate of Castelporziano (PEC) was recognised as a state nature reserve in 1999 (Recanatesi, 2015), and the related coastal strip was identified as a SCI (site of community interest) in 2005.

The protection regime is limited to the terrestrial belt, but due to the presence of a security regime, some activities, including fishing and tourist activities are prohibited. However, this protection regime does not protect the coast from various stress factors, such as the presence of microplastics and chemical contaminants, coming from nearby areas. The area in front of the PEC was the subject of a study conducted by ISPRA in 2004 (Bianchi et al., 2006). In 2021, a further study was conducted on macrozoobenthic communities and showed different values of the M-AMBI index in the areas inside and outside the Estate.

The aim of the study is to assess the possible relationship between benthic communities and chemical contaminants in the sediment and in some target organisms, through an integrated multidisciplinary study. Specific objectives will be the study of benthic communities due to their importance for assessing the state of environmental quality and the possible bioaccumulation and biomagnification of different types of contaminants; the study of persistent contaminants on both the biotic and the abiotic compartments, in order to evaluate a possible relationship between them (Reynoldson, 1987); microplastic contents, that are all sort of small particles of plastic less than 5 mm (Kershaw, 2019), as additional contaminants in the abiotic and biotic compartments.

To achieve those objectives, oceanographic campaigns will be carried out by ISPRA, through the use of the Van Veen grab with a gripping area of 0.1 m² and a capacity of 20 lt. The sampling plan will include the use of several transects placed at different depth in the area in front of the protected area (PEC) and in two adjacent areas located outside of the protected area.

Data analysis encompasses the computation of the following indices: diversity, abundance, dominance, equitability and species richness; multivariate analyses on biotic data, and the M-AMBI index (Borja et al., 2009) for the assessment of ecological quality status. Chemical analyses of sediment will include the measurements of total organic carbon (TOC), trace persistent metals (Hg, Zn, Cd, Pb) and organic contaminants (IPA, PCB, pesticides). Microplastics will be searched in the stomach contents of specific target organisms (Pinheiro, 2020) and in the marine sediment (Nuelle et al., 2014).



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