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Spatial variability of microbial communities in sediments from tourist ports of the Mediterranean Sea basin

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The Mediterranean Sea has been proposed as a biodiversity hot spot hosting about 17,000 marine eukaryotic species and a number, at present impossible to estimate, of Bacteria and Archaea species. It is a semi-enclosed basin divided into two main sub-basins, with extremely complex water mass circulation and dynamics that give rise to a multitude of habitats, across an east-west and north-south distribution.The environments studied in this work are tourist ports, partially closed habitats, characterized by specific anthropogenic impacts and pollution sources, which can be supposed to be the major forces driving the composition and diversity of microbial communities. The objective of this work was to evaluate the composition and spatial variability of microbial communities in superficial and anoxic sediments of three tourist ports in the Mediterranean Sea. The case study sites were located across the basin: Cagliari (Sardinia, Italy) in the western part, El Kantaoui (Tunisia) in the central part, and Heraklion (Crete, Greece) in the eastern part. Port selection was based on different elements, such as maritime traffic, port dimension. Microbial communities were analyzed by Next Generation Sequencing with the MiSeq platform. Our results showed that the microbial communities in sediments from the three ports had different composition, thus indicating port site as the main grouping factor. A peculiar community composition was highlighted for samples collected near a shipyard in Heraklion, suggesting that this activity heavily impacts the microbial communities and the sediment quality.

Biography

Elena Tamburini has a PhD in Genetics at the University of Pavia with an experimental work on cellulolytic streptomycetes, carried out at the University of Florence. Since 2006, she is a Senior Researcher at the Department of Biomedical Sciences at the University of Cagliari. Her main research topics are microbial surfactants and emulsifiers for environmental applications, microbial communities involved in bioremediation and phytoremediation of hydrocarbons and heavy metals. She has published 25 articles in international peer-reviewed journals and book chapters.

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