

CYPRUS UNIVERSITY OF TECHNOLOGY
FACULTY OF GEOTECHNICAL SCIENCES AND
ENVIRONMENTAL MANAGEMENT



Graduate thesis

**Microbial Biodiversity of *Posidonia oceanica* meadows of Cyprus. A
literature review on microbial community investigation.**

Thanasis Georgiou

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ABSTRACT

Posidonia oceanica is the most common, widespread and important seagrass in the Mediterranean basin, and hosts a large biodiversity of species, including microorganisms such as bacteria and fungi which play a key role in the marine environment. In this study, a first approach was made in order to determine the microbial diversity of the seagrass *Posidonia oceanica*, which is a seriously threatened Mediterranean species in Cyprus. These microorganisms should be exploited further in biotechnology and investigate their role and uses.

The findings of this study revealed that the bacteria genera found in *P. oceanica* were *Vibrio*, *Pseudovibrio*, *Pseudoalteromonas* and *Labrenzia*. The predominant genus was found to be *Vibrio* in the three sampling locations (Limassol, Vassilikos, and Cavo Greco). Furthermore, the study shows that the predominant genus of fungi was *Cladosporium*, followed by *Aspergillus*, *Penicillium* and *Stemphylium*. The fungal species which were identified were, *Stemphylium vesicarium*, *Cladosporium cladosporioides*, *Cladosporium herbarum*, *Penicillium chrysogenum*, *Aspergillus tubingensis*, *Cladosporium sphaerospermum*, *Penicillium brevicompactum*, *Aspergillus niger*, *Davidiella tassiana*, *Cladosporium macrocarpum* and *Stemphylium vesicarium*.

Cultured-based methods are important in investigating the microbial ecology and natural environments, but they are extremely biased in their evaluation of microbial genetic diversity by selecting a particular population of microorganisms. In the framework of this study was to represent a variety of molecular approaches based on direct isolation and analysis of nucleic acids and proteins from environmental studies such as genetic fingerprinting, metagenomics and metaproteomics. This study represents the current molecular approaches used in microbial ecology.