BOOK OF ABSTRACTS

U.PORTO

INVESTIGAÇÃO JOVEM DA UNIVERSIDADE DO PORTO

16.ª EDIÇÃO

ENCONTRO DE INVESTIGAÇÃO JOVEM UNIVERSIDADE DO PORTO

10.11.12
MAIO 2023

REITORIA DA
UNIVERSIDADE
DO PORTO

U.PORTO

iUP INVESTIGAÇÃO JOVEM DA UNIVERSIDADE DO PORTO

TÍTULO | *TITLE*

Livro de Resumos do 16.º Encontro de Investigação Jovem da U.Porto / *Book of Abstracts Young Researchers Meeting of U.Porto*

Universidade do Porto

Vice-Reitor para a investigação e Inovação

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ISBN

978-989-746-356-3

Design

Serviço de Comunicação e Imagem da U.Porto

20656 | Phytotechnology implementation in marine and freshwater environments: case study of floating wetlands

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Abstract

Phytotechnologies are plant-based approaches that solve or complement the solution of environmental problems, by remediating soil, water, and air or restoring ecosystem services in managed landscapes. Floating treatment wetlands (FWIs) are examples of a phytotechnology, also named nature-based solution, that provides water treatment and management with low capital costs, high success rate, low maintenance requirement, and aesthetic nature when compared to conventional solutions. They also promote biodiversity and ecosystem establishment, enabling creation of habitat, nursery spot or as stepping stone. FWIs comprise a floating platform, colonized by selected plants and an anchoring system. The selection of the plant species is very important for the success of a full coverage system and also to assure a full development of a rooting system for phytoremediation purposes. In the present study 4 FWIs were implemented (with different floating materials: 2 of cork and 2 of hand-assembled recycled material), in order to compare the performance and their establishment in two environments: saline and freshwater. The saline environment was associated to a port marina and the freshwater environment to a pond. Selected plant species were considered for each environment. Monitoring of the system is being carried out along time concerning the associated biodiversity, plant establishment and floatability evaluation of the floating platforms. Based on the analysis of these results, this work hopes that these nature-based solutions can contribute to better water management, in order to involve the conservation and rehabilitation of natural ecosystems.

Keywords: Biotechnology; Ecosystem services; nature-based solutions.

Acknowledgments

This research is supported by national funds through FCT-Foundation for Science and Technology within the scope of UIDB/04423/2020, UIDP/04423/2020, and UIDB/50016/2020 projects. Octaviano A. is thankful for the collaboration of the University of São Paulo (USP).