

2024 DOCTORAL INPhINIT FELLOWSHIPS PROGRAMME – INCOMING

The effects of multiple stressors on seagrass pollution mitigation

Area of Knowledge: LIFE SCIENCES

Group of disciplines: Plant, Animal & Environmental Biology, Physiology, Ecology & Conservation

Research project

Seagrass ecosystems sustain a multitude of vital ecosystem services such as blue carbon and nutrient sinks, biodiversity enhancement, coastal erosion prevention and pollution mitigation. Seagrasses, however, are vulnerable to multiple anthropogenic pressures and climate change, and the IPCC and IPBES raise concerns about future losses of seagrass meadows. The effects of combined multiple stressors can be unpredictable and whether these effects are additive or antagonistic is still unknown and must be clarified. In addition, climate change effects can affect seagrass resilience to these multiple threats. The main goals of this PhD work plan will be to assess and model the capacity of seagrass meadows to mitigate coastal eutrophication and pollution, and to determine how the capacity to deliver these ecosystem services varies depending on seagrass conservation status, environmental factors such as ocean warming and other concurrent stressors.

Objectives: (a) Evaluate the effects of multiple pressures, namely nutrients and metals, on the ability of seagrass meadows to remediate pollution in coastal areas. (b) Address the multiple pressures effects on seagrass remediation capacity under climate-change drivers and their effects on biodiversity, bioaccumulation and resilience of seagrasses. (c) Develop predictive scenarios for seagrass meadows ability to reduce pollution under multiple pressures, lastly contributing to carbon dioxide removal and climate change mitigation.

Expected Results: Estimate the potential adverse effects of multiple pollutants and climate change effects on seagrass meadows remediation capacity and seagrass. Assessment of whether the stability of seagrass and the biodiversity are affected by multiple pressures and under climate change drivers. Predictive scenarios for seagrass meadows in coastal areas as pollutant remediation habitats, relevant for future management and conservation actions in seagrass meadows, in the scope of EU policies.

Job position description

The successful candidate will be based at the University of Aveiro (Portugal) and the work will be developed at the Department of Biology, CESAM – Centre for Environmental and Marine Studies and ECOMARE - Laboratory for Innovation and Sustainability of Marine Biological Resources. He/she will integrate the MBA – Marine Biology and Aquaculture Research Group, under the supervision of Drs Ana I. Sousa and João Pedro Coelho.

The successful candidate should have an MSc degree in Biology or similar areas (e.g. Marine Biology, Marine Biological Resources, etc.). The candidate should be responsible for: planning, developing and conducting field and mesocosms experiments to evaluate the effects of multiple stressors on seagrass mitigation capacity under different scenarios; develop the tasks scheduled in the workplan, including laboratorial work, process biota, sediment and water samples. The candidate will also be in charge of results dissemination and

outreach (writing of scientific papers, reports, posters and oral communications in scientific meetings, workshops organization, and dissemination activities).

Preferred or desirable criteria include previous experience in: fieldwork and sampling shallow and coastal waters; implementation of mesocosms experiments; statistical analyses of biological data (namely, multivariate analysis). Preference will be given to candidates with a modelling background.

Supervisor team

Dr. [Ana Isabel Francisco Sousa \(anaisousa@ua.pt\)](mailto:anaisousa@ua.pt); Dr. [João Pedro Martins Coelho](#)

Additional information

Website of CESAM: www.cesam-la.pt

Website of the University of Aveiro, Portugal: <https://www.ua.pt/en/>

Website of BioPradaRia project: <https://biopradaria.weebly.com>

Website of RemediGrass project: <https://remediggrass.web.ua.pt>