

The Leibniz Centre for Tropical Marine Research (www.leibniz-zmt.de) in Bremen is a member of the Leibniz Association, which is supported by the German Federal and State Governments. Through its research, ZMT contributes to developing science-based strategies for sustainable use of tropical coastal systems.

Master thesis project

“Bioremediation in Coastal Aquaculture (BioCoCulture, Ecophysiology working group)”

Starting in September/October 2017

Background of the project:

Aquaculture is seen as a vital part of feeding a growing world population without depleting the ocean's resources. In order for it to contribute to food security without adverse environmental effects, issues of water pollution and ecosystem degradation need to be addressed. Integrated multitrophic aquaculture (IMTA) combines organisms of different trophic levels into one system, increasing its efficiency and decreasing or eliminating waste production by using the effluents of one species as a resource for the cultivation of subsequent organisms. The goal of the BioCoCulture project is to apply an IMTA approach to the development of a module-biofilter for the remediation of fish cultivation effluents that is both ecologically efficient and economically viable. Cultivation of sea cucumbers will be examined as a possibility of using solid wastes from fish culture as a feed for a detritivorous species of high market value. Subsequent stages of the biofilter will include halophytes as well as macroalgae to filter dissolved nutrients.

Thesis:

The thesis will be developed together with the successful candidate to support an on-going PhD project. Experiments will be carried out at the MAREE facilities of the Leibniz Centre for Tropical Marine Research. There is also the option to conduct fieldwork on the Caribbean coast of Cordoba. Possible topics include:

- Investigation and tracing of nutrient pollution through the discharge of aquaculture effluents in the coastal ecosystem.
- Halophyte cultivation experiments to determine filtration efficiencies and growth rates at different salinities, temperatures and flow rates.
- Sea cucumber cultivation experiments using solid wastes from fish cultivation as feed.
- Testing filtration organisms under different nutrient availabilities.

Requirements:

- Current enrolment in a Master's program of marine ecology, biology or related subject area.
- Good team-working skills.
- Experience with bioremediation, stable isotope analysis or work with sea cucumbers, halophytes and/or algae (preferred).
- In case of field work:
 - Fitness and willingness to conduct physically demanding work.
 - Spanish proficiency (preferred).

Application:

Interested candidates are invited to send a letter of interest, a CV and the contact information of one referee as a single pdf file to: Paula Senff (paula.senff@leibniz-zmt.de).

Review of the applications will start on August 1st, 2017 and continues until the position is filled.

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