PhD Position: Do mutualisms protect coastal ecosystems against toxic sulfides?

Aquatic Ecology & Environmental Biology

Institute for Water and Wetland Research, Faculty of Science, Radboud University

Water has been identified as the major environmental issue of the 21st century. Many parts of the world will experience increasing freshwater shortage, while other parts will have a higher incidence of flooding. Poor water quality is a threat to human society as well as to natural ecosystems. The research focus of the Institute for Water and Wetland Research (IWWR) is the natural environment, in particular aquatic ecosystems and wetlands. Many of these environments have been substantially altered by human impact. The changes observed have resulted in stress responses of all living biota and impose major challenges on individuals, populations and the ecosystem as a whole. The IWWR studies the mechanisms of adaptation to these changes, specifically of microorganisms, plants and animals at the level of the molecule, the cell, the organism and the ecosystem. The tight coupling between fundamental scientific research and application distinguishes the IWWR from other national and international institutes on water research. The novel applications for current water problems are developed from innovative fundamental insights in molecular, physiological and ecological processes.

www.ru.nl/iwwr

Research at the IWWR is carried out by complementary and closely interacting research groups that study the mechanisms of cells, organisms and ecosystems by which they adapt to environmental change. The Aquatic Ecology & Environmental Biology group is central in the Institute for Water and Wetland Research (IWWR) and as such embodies its core mission.

Job description

A position for a PhD student is available at the Department of Aquatic Ecology & Environmental Biology (Institute for Water and Wetland Research, Radboud University Nijmegen). The project focuses on mutualistic interactions between marine plants, animals and microbes as a mechanism to break sulfide stress in salt-marsh and seagrass ecosystems, and the consequences of global change for the stability of these coastal systems.

Seagrass systems and salt-marshes form the ecological and economic foundation of our Earth’s coastal zones. Over the last decades, both ecosystem types have suffered unexpected large-scale losses due to mass-mortality of the vegetation (‘dieback’) of which the underlying causes are still unclear. Salt-marshes and seagrass meadows typically accumulate large amounts of organic matter, causing enhanced anaerobic decomposition and the production of toxic sulfides in the sediment. Recent work from our group demonstrated that mutualisms between thiotrophic bacteria, bivalves and plants can reduce sulfide levels, thereby breaking any negative effects associated with organic matter accumulation. This project will (1) identify and investigate the importance of sulfide-detoxification mutualisms for ecosystem functioning using state of the art microbial and biogeochemical methods and (2) test whether anthropogenic impacts – specifically global warming and eutrophication – disrupt these mutualisms, causing the observed large-scale coastal ecosystem degradation. Ideas will be tested under laboratory conditions and in field experiments in both temperate (Wadden Sea, the Netherlands) and subtropical (Florida Bay & Seahorse Key, Florida, USA) areas.

Expected qualifications

We are seeking an enthusiastic experimental ecologist with a strong interest in marine ecosystems, microbiology and multispecies interactions. You must have an MSc degree (or equivalent) in ecology, microbiology or a related field. A multidisciplinary interest, the ability to work in a group, and a strong motivation to obtain a PhD degree are essential.

Conditions of employment

The starting salary is €2,042 per month on a full-time basis and will increase to €2,612 per month in the fourth year.

You will be appointed as a PhD student for a period of four years. Your performance will be evaluated after 18 months. If the evaluation is positive, the contract will be extended by 2.5 years.

Other Information

Please include with your application a letter of motivation, three references, and full academic records.

Additional Information

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Application

You can apply for the job (mention the vacancy number 62.87.12) before 10 December 2012 by sending your application by email to:

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