PhD opportunity in blue carbon science x molecular ecology

Stellenbosch University

Investigating sources of 'blue' carbon in South African estuaries

About the project

Understanding the sources of carbon that accrue in coastal vegetated ecosystems such as salt marshes and seagrass meadows are important contributors to furthering our understanding of these systems as nature-based-solutions. For example, external sources (allochthonous inputs) have been shown to contribute 30-90 % of the organic carbon in seagrass sediments, while salt marshes show lower allochthonous inputs up to 30 %. In South Africa, sedimentary organic carbon contributions have primarily focused on seagrass meadows, with little understanding of transport between and beyond seagrass and salt marshes. Using a combination of isotope analysis and environmental DNA, this project seeks to determine contributions of different vegetation types to sedimentary organic carbon in both meadows of *Zostera capensis* and salt marshes along the South African coastline. Data generated through this PhD are imperative for better assessing the basis for inclusion of blue carbon ecosystems in greenhouse gas inventories and developing carbon offsetting schemes. Furthermore, with concurrent pressures of climate change and anthropogenic pressures, this PhD contributes to ongoing efforts in managing and restoring salt marsh and seagrass ecosystems.

About the lab

The successful student will work in the lab of Prof. Sophie von der Heyden at Stellenbosch University and will be co-supervised by Dr Andrew Ndhlovu at the School for Climate Studies. Our lab is one of Africa's leading marine research groups, specializing in the use of molecular tools to characterize the patterns and processes that drive southern Africa's unique aquatic biodiversity. We also lead large, collaborative projects on the ecology, conservation and restoration of South Africa's seagrasses and salt marshes. As such, our work spans evolutionary and molecular ecology, ecological genomics, blue carbon science, marine microbial ecology, conservation and restoration and the impact of climate and anthropogenic pressures on aquatic systems. We are a dynamic and diverse lab, with a strong emphasis on research excellence and pride ourselves in our student training and support. You can find out more about the von der Heyden lab and our research at : www.vonderheydenlab.com or www.facebook.com/vonderheydenlab.

About the candidate

Applicants for the positions will hard-working, enthusiastic and independently motivated students and able to fit into a fun and diverse lab. You will need an average of at least 65% for your MSc (or equivalent) degree and have strong written, verbal and numerical skills, including an undergraduate or postgraduate module in statistics. Ideally you will have some experience in molecular work (even basic applications such as DNA extractions, PCR and sequencing) or isotope analyses. Bioinformatics skills (specifically experience with NGS pipelines) are a pre-requisite, and a background or strong interest in blue carbon, isotope analyses or environmental DNA metabarcoding is welcome. We provide training in all aspects of the PhD, so this is a great opportunity for students wishing to gain more exposure across diverse research fields.

Value of the Fellowship

The project has an associated stipend of R170,000 per annum, available for three years. Note that this is a tax-free stipend to cover subsistence, accommodation and tuition fees; all project related costs are covered. In addition, we provide relocation costs (return airfare as required) and potentially partial support for international fees where required.

Direct all enquiries to Prof Sophie von der Heyden, svdh@sun.ac.za . For applications to be considered, include an academic transcript, CV and two academic referees, as well as a cover letter outlining your interest in the position.

The closing date for applications is 21 March 2026 and ideal starting date is around June – July.