

Three PhD Scholarships in Marine Ecosystem Science

We are looking for three highly motivated individuals to undertake research leading to a PhD funded as part of the New Zealand Government funded National Science Challenge – Sustainable Seas (www.sustainableseaschallenge.co.nz), a large multi-institutional and trans-disciplinary programme involving researchers from throughout the country. One PhD scholarship is aligned with Program 2: Valuable Seas, and the other two with Program 4: Dynamic Seas. All projects have an emphasis on coastal soft sediment or rocky shore habitats. The specifics of each PhD project will be developed in conjunction with the successful candidate to best match interests and capabilities but will be in following broad areas:

1. Valuable Seas - **Quantifying the delivery of coastal ecosystems services (Scholarship 1)**
In the face of growing pressure to improve environmental stewardship and manage resources sustainably, frameworks based on 'Ecosystem Services' have been used to identify, link and communicate the benefits of nature to humans. However, for many marine ecosystem services, data and methods to measure individual services (e.g. nutrient processing, water filtration) are lacking. Moreover, impacts of human activities on service delivery are not well understood, even when impacts on processes underlying the services may be. Potential research projects may involve validating recently developed proxies of ecosystem services, devising new measures of ecosystem services where appropriate and using a variety of experiments, surveys and modelling to determine impacts of selected human activities on delivery of ecosystem services provided by coastal soft sediment habitats.
2. Dynamic Seas – **Resilience and tipping points in coastal ecosystems (Scholarships 2a & 2b)**
The overall goal of this program is to develop indicators of significant transitions in the structure and function of marine ecosystems (tipping points) and assess consequences of rapid change for management. As part of this program we are interested in conducting field experiments in coastal habitats that will test how different combinations of stressors (e.g., physical disturbance, nutrient loading, turbidity or loss of ecological connectivity) tip ecosystems, as indicated by changes in attributes of communities (e.g., key species, redundancy, diversity), functions (e.g., productivity, nutrient cycling) and interaction networks. Alongside empirical research we will also be developing complex system models with a focus on feedbacks between subsystem components to capture the essential ecosystem dynamics that may lead to tipping points. Potential PhD projects can be developed in either of these two areas or a combination of both. Scholarship **2a** will focus on soft sediment habitats whereas **2b** will conduct complimentary research in rocky reef habitats.

As part of the Sustainable Seas programme students will be very well supported, both in terms of access to research facilities and mentoring. Scientists from the universities of Waikato, Canterbury and Auckland as well as the National Institute of Water & Atmospheric Research (NIWA) will jointly supervise the research. The supervisory team have a long history of integrative, collaborative coastal research and these scholarships represent an excellent opportunity.

The successful candidates must have an MSc or BSc(Hons) (or equivalent qualification), ideally in marine ecology/oceanography or a related discipline. However, background is less important than a strong interest ecology, ecosystem science and good quantitative/modelling skills. A key requirement is a willingness to undertake integrative research across a range of disciplines.

The scholarship is open to students of any nationality and includes a competitive stipend plus fees for three years. The candidate must meet entry requirements for the University of Waikato or University of Canterbury doctoral programme (see www.waikato.ac.nz/study/enrol/higher or www.canterbury.ac.nz/postgraduate/phd-and-doctoral-study). The scholarships will remain open

until filled but we expect to start reviewing applications in early July. The start date is negotiable but we expect the successful candidates to have enrolled by December 2016.

To apply please send a CV, copy of your academic transcript record and a brief statement of research interests and how they align with the proposed PhD research areas to:

Scholarships 1 & 2a (soft sediment habitats)

Professor Conrad Pilditch

School of Science

University of Waikato

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lab home page: conradpilditch.wordpress.com

Scholarship 2b (rocky shore habitats)

Professor David Schiel

School of Biological Sciences

University of Canterbury

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lab home page: www.biol.canterbury.ac.nz/merg