Nutrient limits to manage freshwater plants

The School of Science at the University of Waikato and the National Institute of Water and Atmospheric Research (NIWA) are seeking applicants for a fully-funded PhD project to investigate the potential for nutrient limits in rivers and streams to regulate freshwater macrophyte communities.

Eutrophication Science for Water Reforms – FWWQ1812

The three-year project will be undertaken as part of NIWA’s research programme “Eutrophication Science for Water Reforms: Linking Nutrient Loading to Effects in Freshwaters and Estuaries” which aims to quantify relationships between nutrient loads and eutrophication responses across environments from streams to estuaries, and present these in a structured accessible form suitable for nutrient limit-setting. A key component of this research programme is improving our understanding of how nutrients affect the growth of freshwater macrophytes in flowing waters.

Nutrients originating from land activities can cause eutrophication (excessive growth of plants and algae in freshwater and estuaries), which affects the health of aquatic biota such as insects and fish, in addition to social, economic and cultural values such as drinking water quality, recreation and food gathering. Eutrophication is a widespread problem in New Zealand; recent government policies seek to control the problem by applying nutrient load limits to waterways. We need to improve our ability to predict where eutrophication will occur, what forms it will take, and how much nutrient loads need to be altered to prevent eutrophication from exceeding acceptable levels. The proposed PhD project will contribute to this goal by addressing macrophyte responses to nutrients.

About the PhD Project

The main aim of this project is to investigate relationships between river water and sediment nutrient concentrations and the growth and biomass responses of New Zealand’s freshwater macrophyte communities.

The project will involve outdoor flume experiments, field sampling and statistical analysis of data. Field sampling will likely be focused on a Waikato lowland river.
Details of the PhD Scholarship

We are seeking a high calibre graduate student with demonstrated skills in written and oral communication and strong self-motivation to work in collaboration with scientists at NIWA (Dr Fleur Matheson) and the University of Waikato (Professor Ian Hawes). This project will complement and build on other aquatic plant research being conducted by NIWA and the University of Waikato.

The scholarship is for study at the University of Waikato and consists of a NZ $28,500 student stipend for three years to cover course fees and living expenses.

Successful applicants should ideally have a first-class MSc or BSc (Hons) in freshwater ecology/botany/biology, with experience in sampling freshwater ecosystems and undertaking statistical analysis of data. The scholarship is open to students of any nationality and the candidate must meet entry requirements for the University of Waikato Doctor of Philosophy programme (visit http://www.waikato.ac.nz/study/enrolment/higher-degrees).

The scholarship will remain open until filled but we expect to start reviewing applications in early October 2017. The start date is negotiable (1 November 2017 recommended) but successful candidates must be enrolled by 1 February 2018 at the latest.

Applying for this scholarship

Applications should be sent to fleur.matheson@niwa.co.nz by 6 October 2017. Please include:

1. A short statement about your previous research interests and experience.
2. An indication of your potential start date.
3. A full CV with the names of two referees willing to provide confidential comments about your suitability for the scholarship.

Key contacts

Fleur Matheson (Supervisor – NIWA)
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