PhD top-up scholarship opportunity:

Environmental DNA for the management of aquatic biodiversity of northern Australia

JCU is home to a team of eDNA researchers who are developing rapid and cost-effective technology for monitoring aquatic species in Northern Australia with practical monitoring and assessment applications. We are looking for enthusiastic, dedicated and passionate PhD candidates to join our team.

To appropriately manage the aquatic biodiversity of northern Australia, especially in the face of pressure for development of water resources, there is a requirement to have a greater understanding of faunal distribution, abundance and occurrence patterns, especially for key species of high conservation status or other special interest (e.g. exotics species, cryptic species). There is a need for an approach that can rapidly increase data on the occurrence of aquatic fauna to more effectively manage their populations and to further our understanding of key drivers of population vulnerability/resilience. Being able to conduct more frequent and widespread survey/sampling/monitoring of key aquatic species of importance in northern Australia would greatly assist decisions around appropriate development of northern resources and the current discourse about northern development.

This project will take advantage of the rapidly growing field of eDNA. Organisms constantly shed DNA into their environment (eDNA) and this can be utilised to determine their presence in place of traditional sampling methods. eDNA field sampling can involve as little as collecting water samples and subsequent laboratory analyses. Consequently, the method offers the potential for research and monitoring programs to be conducted rapidly, at lower cost, across a large array of locations, and to involve the participation of non-specialists.

This PhD project will develop and employ eDNA technology for species of conservation and/or management significance. The project can be shaped to the student's interests, but may focus on:

- Development and validation of probes for species of conservation and/or management importance in Northern Australia.

- Development of a metabarcoding approach to target a range of species of interest.

- Investigation of the relationship between water quality parameters, sampling procedures, sample transport time and DNA degradation and detection rates.

The student will be based at James Cook University, Townsville, Australia (under the supervision of Prof. Damien Burrows and Assoc Prof Jan Strugnell). The student will receive expert training in fieldwork and laboratory and bioinformatics skills and work as part of a team of 3 post-docs working on eDNA, and other leading aquatic researchers.

Requirements: The successful applicant will have a First Class Honours (or equivalent) in biological science or a related field and will pick up extra points in the scoring system if they have a first authored paper. Applicants must be eligible for an Australian Postgraduate Award (APA). Preference will be given to those applicants with previous experience in genetics and/or evidence of strong technical and laboratory skills. Journal publications in these fields are desirable but not essential. A top-up ($10,000) per year for three years is available for this project. Operating funds are also available.

Enquiries are welcome. Please submit a short cover (1 page max.) letter detailing your suitability and interest, academic transcript and a CV with contact details for two referees by email to:

Prof Damien Burrows and Assoc Prof Jan Strugnell

e-mail: *damien.burrows@jcu.edu.au*, *jan.strugnell@jcu.edu.au*

Also visit *https://research.jcu.edu.au/tropwater*