

### **3 PhD projects in conservation/environmental science**

We currently have three PhD projects and are seeking enthusiastic, quantitative conservation/interdisciplinary scientists on diverse projects. These projects are largely desk-based (ideal at the moment), but will have strong international and national collaboration networks. Start dates are ASAP – ideally by August, but with some flexibility. All three will be funded by Deakin University [scholarships](#), and are open to Australia and international students. **Closing date 1<sup>st</sup> of June 2020.** Please send applications (cover letter, addressing the selection criteria listed for each project, and CV) to Emily Nicholson ([e.nicholson@deakin.edu.au](mailto:e.nicholson@deakin.edu.au)).

#### **1. PhD Project: Planning for sustainable development and biodiversity on Indigenous lands**

**Primary supervisor:** A/Prof Emily Nicholson ([e.nicholson@deakin.edu.au](mailto:e.nicholson@deakin.edu.au))

**Project Team:** Emily Nicholson (Deakin), Brett Murphy (Charles Darwin University, CDU), Margaret Ayre (University of Melbourne, UM), Jane Elith (UM), Gurutzeta Guillera-Arroita (UM), Alan Andersen (CDU), Brett Bryan (Deakin), Tom Kompas (UM) (see photo below)

**Funding:** Australian Research Council Linkage grant LP170100305

Sustainable development is critical to reconciling economic growth, human well-being and biodiversity conservation across the globe. The complexity of planning for sustainable development is exemplified in the Tiwi Islands, 60km north of Darwin in the Northern Territory, Australia. The Tiwi Land Council, the primary decision-making body for land use on the Islands, is seeking to expand economic opportunities for Tiwi communities and to improve social, economic and health outcomes for the Tiwi people, while sustaining the Islands' unique cultural and biodiversity values. This project aims to support decision-making on the Tiwi islands, through new methods for collaborative land-use planning that advance knowledge about trade-offs between sustainable economic development and biodiversity conservation on Indigenous lands. Our approach is trans-disciplinary and participatory, integrating Indigenous and scientific knowledge and methods.

Effective management requires information on the distribution, dynamics and values of species and ecosystems of high importance to biodiversity conservation and Indigenous cultural values. The Tiwi Islands support unique biodiversity. Extensive data and knowledge on biodiversity are found across disparate sources, including Indigenous and western scientific knowledges, and remotely sensed and field data. This project will 1) map past and current distributions of key species, drawing on these different sources, working with Tiwi communities and research assistants, and scientists across Australia, and 2) develop models of potential future dynamics under scenarios of climate and land-use change, and different management strategies.

#### **Skills and qualifications required:**

- Undergraduate degree with honours and/or masters degree in ecology, environmental science or a related discipline, with a research component (e.g. thesis/dissertation) and an excellent academic track record
- Demonstrated high-level skills in written and verbal communication (e.g., scientific publications)
- Quantitative skills in statistics, data analysis and/or process-based modelling
- Skills in programming in languages such as R (or similar), spatial analysis such as species distribution modelling (in R and/or GIS), and/or experience working with remotely sensed data
- Willingness to travel to remote Tiwi Islands and stay for periods of field work
- Current driver's license

- Desirable: experience working with indigenous people.

This project will be funded by and primarily based at Deakin University, but the student will be a member of both the [Conservation Science Research Group](#) at Deakin and [Qaeco](#) at the University of Melbourne.

## **2. PhD project: Improving the implementation and integration of biodiversity risk assessments**

Deakin University, School of Life and Environmental Sciences, Centre for Integrative Ecology

**Supervisors** (Deakin): [A/Prof Emily Nicholson](#) and Dr Chloe Sato.

The Earth is currently experiencing a global biodiversity crisis. Ecosystems are collapsing and species extinctions are occurring at an unprecedented rate. The IUCN Red List of Ecosystems was developed to assess risks to biodiversity, and is rapidly gaining traction in informing global conservation targets and national assessments of threatened communities. To further enhance the contribution of the Red List of Ecosystems to biodiversity conservation, it is important to better understand the relationships between different approaches to undertaking assessments, and how the Red List of Ecosystems integrates with other risk assessment processes, such as the Red List of Threatened Species.

In this project, the PhD student will use a combination of literary synthesis, field work and modelling to explore how the Red List of Ecosystems can be implemented and used to improve outcomes, including developing an understanding of:

- 1) how temporal and spatial scale of data influence outcomes of assessments;
- 2) how different assessment processes (i.e. the Red List of Ecosystems and the Red List of Threatened Species) work together to enhance conservation decision making;
- 3) how Red List assessment can improve management recommendations and outcomes.

The project will be co-supervised by quantitative conservation scientists at Deakin University, and will develop new theory and approaches that enhance the application of the IUCN Red List of Ecosystems at national and global scales.

This exciting PhD project offers opportunities to work at the science-policy interface with academics and practitioners from Australia and overseas to develop case studies that influence global and national policy approaches and measurement standards. The student should have:

- Undergraduate degree with honours and/or masters degree in ecology, environmental science or a related discipline, with a research component (e.g. thesis/dissertation) and an excellent academic track record
- experience and quantitative skills for data analysis and modeling, ideally in R (or a willingness to develop such skills); and
- some experience in undertaking ecological field work;
- demonstrated skills in written research outputs (thesis, and preferably a scientific publication)
- capacity to work in a team environment, particularly an inter-disciplinary team.

The project forms part of an ARC Linkage grant on the IUCN Red List of Ecosystems (LP170101143).

**Supervision team:** A/Prof Emily Nicholson is a conservation scientist at Deakin University, whose research interests include measuring change in biodiversity, and predicting the impacts of change on biodiversity and the benefits ecosystems provide for people. Emily is co-leader of the Red List of Ecosystems theme within the IUCN. Dr Chloe Sato is a postdoctoral research fellow involved in

IUCN Red List of Ecosystem assessments in Australia, with experience in alpine ecology, ecosystems science, and biodiversity indicators.

### **3. PhD project: Connecting biodiversity risk assessment, human well-being and natural capital accounting**

Deakin University, School of Life and Environmental Sciences, Centre for Integrative Ecology

**Supervisors** (Deakin): [A/Prof Emily Nicholson](#), Dr Chloe Sato and Dr Hui Xiao.

**External co-supervisor/collaborator:** Carl Obst ([Institute for Development of Environmental-Economic Accounting](#))

**Background:** The global biodiversity crisis is causing ecosystem collapses and species extinctions at an unprecedented rate, eroding the capacity of the environment to provide essential services that sustain human well-being, economies and social fabrics. Multiple approaches have been developed to assess risks to biodiversity (for example the IUCN Red List of Threatened Species and the Red List of Ecosystems), to value the benefits it supports, and to account for stocks and flows of the benefits from natural capital to human well-being. These approaches remain largely disparate, with limited exchanges between extensive ecological and economic knowledge bases and data.

In this trans-disciplinary project, the PhD student will bring together different knowledge types and theory to improve the monitoring and management of natural ecosystems. Specifically, the student will: 1) review the theory and empirical evidence supporting the relationships between ecosystems, benefits they provide and human well-being ; and 2) use novel modelling and statistical approaches, together with several case studies, to bring together the IUCN Red List of Ecosystems approach and the United Nations System of Environmental Economic Accounting (UN SEEA EEA) approach. Both are seeing rapid uptake around the world, with great scope for informing and supporting one another, but integration is in its infancy. By working with leading authors in both the RLE and SEEA approaches, this exciting PhD project will influence global and national policy approaches and measurement standards. This project provides an excellent opportunity for the student to work with scientists and practitioners across the world, and investigate and work on the compilation of models and data for a set of Australian and international case studies.

**Selection criteria:** The student should have:

- an honours degree in environmental science, ecology/conservation, environmental economics or similar, with a research component (e.g. thesis/dissertation) and an excellent academic track record
- experience and quantitative skills for data analysis and modeling, ideally in R (or a willingness to develop such skills)
- demonstrated skills in written research outputs (thesis, and preferably a scientific publication)
- capacity to work in a team environment, particularly an inter-disciplinary team.

The project forms part of an ARC Linkage grant on the IUCN Red List of Ecosystems (LP170101143).

Please send a cover letter, a statement addressing the selection criteria, CV and completed [expression-of-interest form](#) (from the [Deakin HDR website](#)) to Emily Nicholson ([e.nicholson@deakin.edu.au](mailto:e.nicholson@deakin.edu.au)) by **8<sup>th</sup> of September 2019**, to apply for this position. International or domestic students can apply; there is a scholarship associated with this position (please refer to the [Deakin HDR website](#) for conditions).

**Supervision team:** A/Prof Emily Nicholson is a conservation scientist at Deakin University, whose research interests include measuring change in biodiversity, and predicting the impacts of change on biodiversity and the benefits ecosystems provide for people. Emily is also the co-leader of the Red List of Ecosystems theme within the IUCN. Dr Chloe Sato is a postdoctoral research fellow involved in IUCN Red List of Ecosystem assessments in Australia, with experience in alpine ecology, ecosystems science, and biodiversity indicators. Dr Hui Xiao is a postdoctoral researcher at Deakin, working at the interface of quantitative ecology and economics. Carl Obst is the Director of the Institute for Development of Environmental-Economic Accounting (IDEEA Group), with extensive expertise in national accounts. Carl was the lead author and editor of the System of Environmental-Economic Accounting (SEEA) – the international standard for this area of work.