



JOINT PHD SCHOLARSHIPS: MACROECOLOGY & BIODIVERSITY CONSERVATION

We are currently looking for two enthusiastic PhD students to work on a hot topic in global change ecology: **How do biological mechanisms mediate responses of biodiversity to climate- and human-driven change?**

The successful candidates will be enrolled in a dual award PhD program recently established between the University of Adelaide and University of Copenhagen.

These PhD projects will be part of research funded by the *Australian Research Council*, the *Danish Council for Independent Research* and the *Villum Foundation*, involving several senior and postdoctoral scientists. The successful candidates will work closely with this diverse and highly skilled group of international researchers. This new project will use fossils, natural history records, ancient DNA and computational models to determine the ecological processes that (i) drive the structure and dynamics of species ranges and (ii) regulate the risk of extinction from global change. The successful candidates will have access to state-of-the-art computational facilities, recently compiled fossil records, paleo and historical climatic simulations and paleo and contemporary genetic data.

Position 1: Unravelling past mammal declines to improve conservation actions.

Australia's terrestrial mammal fauna is among the most distinct in the world. However, among continents it has suffered an extraordinary rate of loss of species since European settlement. This PhD project will improve capacity to halt declines and extinctions of Australian native land mammals by generating rigorously validated continental-wide reconstructions of the ecological processes and threats that caused distribution and population collapses of mammals during the 19th and 20th centuries. Specifically, the successful PhD candidate will integrate ecological models with forensic insights from *Holocene fossils* and sighting records from *explorers, naturalists* and *early settlers* to spatiotemporally reconstruct the range dynamics of small-to-medium sized terrestrial mammals since European settlement of Australia.

Key outcome: a stronger understanding of how the dynamics of extinction threats interact with ecological processes in space and time to cause common species to become rare.

Position 2: Assessing resilience of Arctic marine mammals to future climate change

The Arctic is one of Earth's most fragile ecosystems, and the scale of change taking place in Arctic environments and ecosystems due to rising temperatures and losses of sea ice cover is immense. This PhD project will use already assembled paleo-archives to safeguard Arctic marine mammals from future climate change. The successful PhD student will combine inferences of demographic change from fossils and paleogenomes with ecological models to quantify how past abrupt climatic perturbations affected the ranges and abundances of up to six Arctic marine mammal species. By integrating these findings into conservation models, this project will have direct relevance to the many communities across the Arctic region that rely on these enigmatic species for their livelihoods.

Key outcome: an empirical foundation for anticipating the vulnerability and resilience of Arctic marine mammal species to near-future projections of accelerated climate change.

Supervision and mentoring will be provided by key personnel at the University of Adelaide's School of Biological Sciences and the University of Copenhagen's Globe Institute. Both institutions are international leaders in the fields of macroecology, conservation biology, paleoecology, paleoclimatology, and paleogenomics. The PhD students will spend time researching at both institutions during their candidature.

You should have:

- Master degree in ecology, climate science, mathematics, conservation biology or population genetics.
- A strong interest in ecological modelling, conservation science, paleoecology or paleogenomics
- Competency in statistical and spatial data analysis
- Excellent time and data management and interpersonal skills
- Evidence of well-developed verbal and written communication skills

Desirable Characteristics

- Publication record in international peer-reviewed journals
- Experience with metapopulation or individual-based demographic models or metacommunity models
- Familiarity with open-source geographic information software
- Knowledge of advanced statistical languages such as R, Python or Matlab
- Familiarity with late Quaternary ecological proxies and / or natural history records.

Salary: Tax free stipend of \$28,092/yr (AUD) plus a top-up scholarship of \$10,000 to \$20,000/yr (AUD) for a total of three years.

Applying:

Your application should:

- include your résumé/Curriculum Vitae and copies of any published papers
- address the selection criteria
- include residency status
- include the names, addresses and/or email details of two referees

Email applications to damien.fordham@adelaide.edu.au.

If you have any queries regarding this position, please contact A/Prof. Damien Fordham (damien.fordham@adelaide.edu.au); Prof. Carsten Rahbek (crahbek@sund.ku.dk) or A/Prof. Eline Lorenzen (elinelorenzen@sund.ku.dk).