

Seeking PhD students: the seed biology and ecology of endangered grassy woodland plant communities

We are seeking PhD students interested in conservation biology, ecology and/or physiology, who hold a Masters or 1st class Honours degree in a relevant field, to lead a new research program into the seed biology and ecology of Australian grassy woodland plants. There is potential to conduct fieldwork across temperate southeast Australia and you can gain skills in survey, experimentation and modelling of ecological and evolutionary processes to solve current problems in evolution, ecology and biodiversity conservation. There will be plenty of opportunity for you to direct the research questions to align with your interests, within the broader project aims. You will be co supervised by Dr Lydia Guja (Australian National Botanic Gardens (ANBG) /CSIRO), Dr Jodi Price (Charles Sturt University (CSU)) and Professor Adrienne Nicotra (Australian National University (ANU)). Enrolment will be at ANU and/or CSU Albury.

Many grasslands and grassy woodland communities in SE Australia are endangered. Seed is the fundamental unit of restoration in these endangered communities but germination and establishment of species (e.g. Figure 1) which are key contributors to the diversity, structure and habitat values are often poor. This research program seeks to:

- Investigate the biological, evolutionary and ecological determinants of seed dormancy, germination strategy, and seedling establishment traits in the endangered community
- Conduct research into the seed germination biology of difficult to germinate species
- Integrate biological, evolutionary and ecological knowledge gained through laboratory, glasshouse and/or field trials to find restoration solutions that improve seedling survival and establishment in the field



Figure 1. Selection of grassy woodland species that are difficult to germinate or variable in their seed germination behaviour. Left to right: *Bursaria spinosa* (Blackthorn), *Cheiranthra linearis* (Finger flower), *Dianella revoluta* (Black-anther flax-lily), *Stackhousia monogyna* (Creamy candles), and *Tricoryne elatior* (Yellow rush-lily). All images M Fagg © ANBG

Funding

Projects within the research program are supported by organisations with an interest in restoration. In addition to standard university contributions the top ranked candidates will receive:

- a top-up scholarship (up to \$10,000 per year for 3 years)
- and may also receive laboratory and travel funding (potentially up to \$15,000 per year for 3 years, to be confirmed)

Research environment

With a focus on Australian native seeds Lydia Guja (<https://www.anbg.gov.au/cpbr/staff/guja-lydia.html>) investigates seed conservation biology, ecology, stress tolerance, and landscape restoration. Seed conservation and research projects are conducted at the National Seed Bank (<http://www.anbg.gov.au/gardens/living/seedbank/>), ANBG, where staff, students and volunteers conserve seed of over 3500 Australian native plant species and conduct research to understand their germination biology and ecology.

Jodi Price is a plant community ecologist who is broadly interested in community assembly, disturbance, restoration and invasion ecology. Jodi commonly works in temperate grasslands and grassy woodlands (<https://www.csu.edu.au/research/ilws/team/profiles/members/jodi-price>).

The Nictora lab at ANU lab applies novel approaches in plant comparative ecology to the study of evolutionary ecology and ecophysiology to give insights into patterns and processes underlying plant function at multiple scales (<http://biology.anu.edu.au/research/labs/nicotra-lab-plant-physiological-ecology-plant-evolutionary-biology-reproductive>).

Eligibility & application

Closing date: Sunday 2nd October 2016

Interested students who hold a Masters or 1st class Honours degree in a relevant field should email:

- 2 page statement of research interest and experience
- maximum 2 page CV
- academic record
- names and contact details of 2 academic referees

to Dr Lydia Guja (Lydia.Guja@environment.gov.au) by Sunday 2nd of October.

Applicants will be selected to submit a PhD scholarship application at ANU and/or CSU. Students must secure a PhD stipend scholarship to conduct the research.

The successful candidates will commence their projects in early 2017.