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BSc (Hons Class 1A)

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Summary

The infraorder Mygalomorphae contains the infamous funnel-web spiders, tarantulas, trapdoor spiders and other large, fossorial spiders of this ilk. While these spiders are dangerous and scary in the eyes of many, to a researcher they offer a model organism for studying evolutionary processes. The low dispersal ability of these spiders has caused many different species to form over small spatial scales. For example, in the trapdoor spider genus *Misgolas* there are around 40 species described from New South Wales alone! Such high levels of diversity make these spiders very interesting, but also mean that some species, which may only occur in a small area, are vulnerable to extinction. The golden trapdoor spiders (genus *Euoplos*) occur throughout the mesic regions of Australia, but appear to be especially dominant throughout south east Queensland, even occurring within Brisbane. These spiders live in a burrow with a highly camouflaged 'trapdoor' entrance, and although they can occur in high densities in many of the forests of eastern Australia, they are highly cryptic to the untrained eye. Currently, only seven species of golden trapdoor are described from eastern Australia, and we understand very little about how this group evolved. However the recent discovery that these spiders create a variety of previously unknown burrow types suggests that many species in this genus remain undiscovered. A preliminary investigation into the specimens stored in the museums of eastern Australia indicates that over 20 undescribed species occur along the east coast! The goal of my PhD is to study the morphology (physical appearance) of these spiders, and combine this information with modern genetic analysis methods in order to describe new species in this group, before investigating the evolutionary processes that have led to these species occurring where they do today. This research is important as formally describing these species is vital for their conservation and many of them could be vulnerable to extinction as urbanisation threatens the natural areas of the highly populous east coast. It is also important that we increase our understanding of evolutionary processes, as understanding how past events have impacted Australian fauna will allow us to better predict how future environmental changes may impact them.

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Research Expertise

- Arachnology
- Systematic Biology
- Molecular Phylogenetics
- Species Delimitation
- Australian Biogeography