PhD Opportunity

Speciation, Hybridisation and Population Divergence in Tasmanian Snow Skinks

School of Zoology, University of Tasmania

Funding:
Australian and New Zealand Students: APA ($23,728) and a top up $7 500 per year
International Students: UTAS offer a number of competitive scholarships that may cover tuition fees and/or living expenses depending on specific circumstances (international applicants are encouraged to pursue funding from their own country also)
Project support - $10 000 per year (ARC supported project through Future Fellowship to Associate Prof Erik Wapstra)
**all PhD students at UTAS are provided a new personal laptop on enrolment and access to international conference funding during their candidature**

Who are we looking for: You will need to be competitive for an Australian Postgraduate Award (generally First Class Honours or a Research Masters Degree). You will need to enjoy fieldwork, laboratory work and have a passion for research science. A background in evolutionary biology will be key as will a desire to combine fieldwork, molecular ecology and potentially experimental and laboratory work.

When: UTAS and the School of Zoology is open to applications year round and you can expect to receive an offer within 4-6 weeks of application (dependent on eligibility and complete paperwork)

Project Description: The snow skinks (Niveoscincus) of Tasmania offer a fantastic opportunity to explore a range of historical and contemporary evolutionary processes including speciation, hybridisation, and phylogeography within species. The snow skinks are comprised of 8 species, 6 of which are endemic to Tasmania, 1 of which is restricted to mainland Australia and one of which occurs in both Tasmania and mainland Australia. In addition to climate-driven speciation and population divergence, there have been a series of key evolutionary adaptations including independent origins of specialised alpine reproductive strategies and divergence of sex determination. Using a combination of field studies and advanced molecular approaches this project will provide insights into these events.

For more information please contact Associate Professor Erik Wapstra at the School of Zoology, University of Tasmania.
Ph: + 61 3 6226 2813, Email: erik.wapstra@utas.edu.au
PhD Opportunity

The Mechanisms Behind Evolutionary Transitions Between Genetic Sex-Determination and Temperature-Dependent Sex-Determination

School of Zoology, University of Tasmania

**Funding:**

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**When:** UTAS and the School of Zoology is open to applications year round and you can expect to receive an offer within 4-6 weeks of application (dependent on eligibility and complete paperwork)

**Project Description:** Sex determination is a fundamental biological process, yet its mechanisms are remarkably diverse. In vertebrates, sex can be determined by inherited genetic factors or by the temperature experienced during embryonic development. However, the evolutionary causes of this diversity remain an enigma. In this project you will have the opportunity to build from our recent work that showed that live-bearing lizards from different climates differ in their sex-determining mechanisms, with temperature-dependent sex-determination in warm areas and genotypic sex determination in cold alpine areas. A theoretical model parameterized with field data accurately predicted this divergence in sex-determining systems and the consequence thereof for variation in cohort sex ratios among years with predictions of shifts in chromosomal control of sex determination. While our results established an adaptive explanation for intra-specific divergence in sex-determining systems driven by phenotypic plasticity and ecological selection, we lack knowledge of the physiological mechanisms behind these shifts.

For more information please contact Associate Professor Erik Wapstra at the School of Zoology, University of Tasmania.

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PhD Opportunity

Molecular aggression: variation and heritability of the levels of reactive oxygen species and their effects on the evolution of life histories in the wild

School of Zoology, University of Tasmania

Funding:
Australian and New Zealand Students: APA ($23,728) plus top up $7,500 per year
International Students: UTAS offer a number of competitive scholarships that may cover tuition fees and/or living expenses depending on specific circumstances (international applicants are encouraged to pursue funding from their own country also)
Project support - $10,000 per year (ARC supported project)

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Who are we looking for: You will need to be competitive for an Australian Postgraduate Award (generally First Class Honours or a Research Masters Degree). You will need to enjoy fieldwork, laboratory work and have a passion for research science. A background in evolutionary biology will be key as will a desire to combine fieldwork with experimental and laboratory work.

When: UTAS and the School of Zoology is open to applications year round and you can expect to receive an offer within 4-6 weeks of application (dependent on eligibility and complete paperwork)

Project Description: Ageing is arguably one of the most fundamental aspects of a species life history and impacts almost every other fitness component (e.g., tradeoffs with fecundity and fertility, and investments into immunology and DNA repair). This PhD project will integrate a detailed field based component with laboratory studies on an established model system to examine free radical biology (the molecules responsible for ageing) and their effects on key life history characteristics. Specifically, it will assess the extent to which the production and maintenance of levels of Reactive Oxygen Species and other reactive metabolic by-products of respiration act as selection pressures in natural populations. This project is part of an ARC funded discovery grant to Professor Mats Olsson (University of Sydney) and Associate Professor Erik Wapstra (University of Tasmania).

For more information please contact Associate Professor Erik Wapstra at the School of Zoology, University of Tasmania.
Ph: + 61 3 6226 2813, Email: erik.wapstra@utas.edu.au
PhD Opportunity

Mother knows best: the how, when and why of sex allocation in snow skinks

School of Zoology, University of Tasmania

**Funding:**

**Australian and New Zealand Students:** APA ($23,728) and a top up $7,500 per year

**International Students:** UTAS offer a number of competitive scholarships that may cover tuition fees and/or living expenses depending on specific circumstances (international applicants are encouraged to pursue funding from their own country also)

**Project support -** $10,000 per year (ARC supported project through Future Fellowship to Associate Prof Erik Wapstra)

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**Who are we looking for:** You will need to be competitive for an Australian Postgraduate Award (generally First Class Honours or a Research Masters Degree). You will need to enjoy fieldwork, laboratory work and have a passion for research science. A background in evolutionary biology will be key as will a desire to combine fieldwork with experimental and laboratory work.

**When:** UTAS and the School of Zoology is open to applications year round and you can expect to receive an offer within 4-6 weeks of application (dependent on eligibility and complete paperwork)

**Project Description:** Evolutionary biology is currently undergoing a major shift in focus, with maternal effects and developmental plasticity gaining a more prominent role. This project integrates empirical and theoretical research on maternal effects in a viviparous lizard with a focus on sex allocation – the division of resources into sons and daughters. You will have the opportunity to i) provide tests of adaptive hypotheses of maternal effects on offspring sex and size, (ii) document the underlying basis for population divergence in maternal effects, (iii) use mathematical modeling to evaluate adaptive hypotheses and the role of maternal effects in promoting local adaptation to changing environmental conditions and iv) examine the underlying mechanisms of sex determination. This work builds from recent exciting work using spotted snow skinks (*Niveoscincus ocellatus*) where we demonstrated that sex determination differs between geographically widespread populations because of climatic and life history differences between them.

For more information please contact Associate Professor Erik Wapstra at the School of Zoology, University of Tasmania.

Ph: + 61 3 6226 2813, Email: erik.wapstra@utas.edu.au